American
Vegetable Grower
MARCH • 1955

YOUR PLANTS DESERVE A GOOD START

Better Vegetables with Less Work

Arcadian®

UREA 45

FERTILIZER

Any way you apply it, ARCADIAN UREA 45, the 45% Urea Nitrogen Fertilizer saves work and cuts application costs while it boosts yields profitably. It speeds the job of applying nitrogen needed for fast-growing, high-quality vegetables and potatoes. Place your order now for this work-saving, adaptable new nitrogen. Write us and we'll send you free literature and tell you who sells ARCADIAN UREA 45 in your vicinity.

Top-dress cover crops, vegetable stubble and sod before you plow—with fast-spreading, smooth-flowing UREA 45. Every easy-lifting 80-pound bag contains 36 pounds of nitrogen—two or three times as much as ordinary nitrogen fertilizer. You have fewer bags to lift to get all the nitrogen needed to rot crop residues into nitrogen-rich humus, and to feed your hungry crops throughout the season.

Side-dress with UREA 45 when your crops need an extra nitrogen boost. ARCADIAN UREA 45 feeds crops quickly, even in cool soil, yet lasts throughout the growing period. With short-season vegetables, any UREA 45 left over stays in the soil to rot crop residues fast and to feed the next crop planted. UREA 45 spreads readily in any fertilizer equipment.

Apply UREA 45 in irrigation water. Let water do the work of spreading and do two jobs in one. Irrigation water carries UREA 45 everywhere it penetrates, to feed all crop roots equally well. There is no waste—UREA 45 stays locked to the soil until crops need it. UREA 45 feeds all the crop roots in furrow, bed and underground pipe irrigation, as well as in flood and sprinkler systems.

Arcadian®

PRODUCTS FOR PROFITABLE FARMING

Urea 45 Fertilizer—*45% Nitrogen Pellets*
Nitrogen Solutions—
Pressure and Non-Pressure types
American Nitrate of Soda—*Improved Granular*
A-N-L® Nitrogen Fertilizer—*Pelleted*
Sulphate of Ammonia—*Dry Crystalline*

NITROGEN DIVISION Allied Chemical & Dye Corporation
New York 6, N. Y. • Ironton, Ohio • Omaha 7, Neb.
Atlanta 3, Ga. • Hopewell, Va. • Indianapolis 20, Ind.
Columbia 1, S. C. • San Francisco 3, Cal. • Los Angeles 15, Cal.

NITROGEN DIVISION ALLIED CHEMICAL

Entered as second-class matter at Post Office at Willoughby, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

More F_1 Burpee HYBRIDS for Better Quality Bigger Yields

New for 1955

SEED SUPPLY LIMITED—Order Your Test Quota Right Away—Make Comparison Plantings and Be Ready for Big Profit Acres Next Season.

Burpee Hybrid Cantaloupe

From Burpee's Fordhook Farms comes this heavy cropper, true F_1 Hybrid, best of all crosses made by our experts. Heavily netted, distinctly ribbed. Thick, firm, juicy deep orange flesh, extra delicious. More vigorous vines, earlier bearing, disease-resistant. Popular shape, about 5 x 6 in., 3 to 3½ lbs. Small supply, order limited. ¼ oz. $2.25.

Burpee Hybrid Zucchini

This new F_1 Hybrid Zucchini is destined to be a market growers favorite. It resembles Burpee's Fordhook which has built up such big consumer demand. Bears 2 weeks earlier, has heavy yield all summer. Bush plants. Handsome, shiny dark green; when picked about 8 in. long, cooks exceedingly tender and delicious, practically no evidence of seeds. 1 oz. $1.00.

CATALOG OF WHOLESALE PRICES

Burpee Special Strains for Market Growers, and complete list of all leading vegetables and flowers.

FREE Use coupon below to get this restricted book for Market Growers and florists.

VEGETABLE GROWERS know the big advantages of Burpee Hybrids for heavier yields and higher quality. They get top market prices. You'll praise these new kinds, as well as Burpee's Hybrid Tomatoes, Hybrid Cucumber, Hybrid Eggplant. Mail coupon today!

Burpee Hybrid Vegetables Make More Money For You

W. ATLEE BURPEE CO., PHILA. 32, PA.—CLINTON, IOWA—RIVERSIDE, CALIF.

To: **W. Atlee Burpee Co.** 903 Burpee Building { Philadelphia 32, Pa. / Clinton, Iowa / Riverside, Calif.

Please send me your 1955 Blue List Catalog.
Send postpaid seeds of new vegetables marked below:

☐ ¼ oz. Burpee Hybrid Cantaloupe $2.25
☐ 1 oz. Burpee Hybrid Zucchini $1.00

Enclosed is $.....

Name.....

R.D. or St.....

P.O.....State.....

American
VEGETABLE GROWER

REG. U. S. PAT. OFF.
(Commercial Vegetable Grower)
Vol. 3 March 1955 No. 3

FEATURED IN THIS ISSUE

Cover photograph of cabbage field is by Gladys Diesing

DEPARTMENTS

AMERICAN VEGETABLE GROWER

Published Monthly by
AMERICAN FRUIT GROWER PUBLISHING CO.
Willoughby, Ohio
E. G. K. MEISTER, Publisher
RICHARD T. MEISTER, Editor

Editorial Staff
E. K. GOULD, Managing Editor
H. B. TUKEY ELDON S. BANTA
R. L. CAROLUS M. P. RASMUSSEN
GEORGE M. ROSS, Art Director
J. D. AUHL, Production Manager
EDWARD L. MEISTER, Director of Advertising

District Advertising Offices
NEW YORK, Martin-Snow Co., 140 E. 46th St. Phone—Plaza 5-0878
CHICAGO, Peck and Billingslea, Inc., 185 N. Wabash. Phone—Dearborn 2-0292
SAN FRANCISCO, McDonald-Thompson, 625 Market St. Phone—Yukon 6-0647
LOS ANGELES, McDonald-Thompson, 3727 West 6th St. Phone—Dunkirk 7-5391
SEATTLE, McDonald-Thompson, 1008 Western Ave. Phone—Elliot 3767
HOUSTON, McDonald-Thompson, 3217 Montrose Blvd. Phone—Lynchburg 6711
DENVER, McDonald-Thompson, 222 Colorado National Bank Bldg. Phone—Keystone 4-4669

AMERICAN VEGETABLE GROWER is published by American Fruit Grower Publishing Co., Willoughby, Ohio. E. G. K. Meister, Publisher and Chairman of the Board; Edward L. Meister, President; Richard T. Meister, General Manager; Gilbert Meister, Vice-President. Subscription price $1.00 per year in U.S. and possessions, to Canada and other foreign countries $1.50. Single current copies 25c, copies over one year old 75c.

When changing your address, send us old as well as new; send the address label from your last copy; allow 5 weeks for the first copy to reach your new address.

Postmaster: Please send change of address "Form 3579" to AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

OWER

ower)

No. 3

SSUE

eld is by

ngs and

GROWER

LISHING CO.

litor

Editor

ON S. BANTA

. RASMUSSEN

rector

nager

Advertising

es

E. 46th St.

Inc., 185 N.

2-0292

son, 625 Mar-

647

n, 3727 West

391

Western Ave.

217 Montrose

711

Colorado Na-

ne 4-4669

s published by

., Willoughby,

d Chairman of

ident; Richard

Meister, Vice-

per year in

other foreign

es 25c, copies

us old as well

your last copy;

each your new

address "Form

ROWER, Wil-

LE GROWER

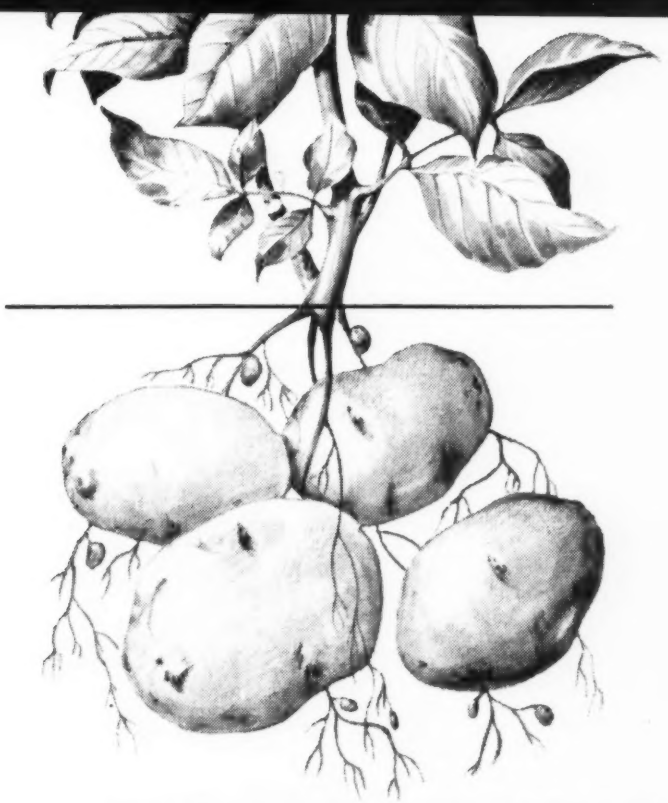
Agr
nov

B

This
have
both
comb
gives
dip o
of Ag
In
versit

One b
make

New antibiotic crop saver helps insure full, healthy stand, top yield



Agri-mycin Dip now STOPS BLACKLEG and SOFT ROT

This spring for the first time, potato growers have a powerful and effective control against both Blackleg and Soft Rot. The balanced combination of antibiotics in Agri-mycin* 100 gives complete control with just a few minutes dip of the seed pieces before planting. One jar of Agri-mycin makes 100 gallons of dip solution.

In large-scale tests conducted at state university experiment stations over the last three years, the effectiveness of Agri-mycin* 100 in controlling Blackleg and Soft Rot was proved conclusively. Even when seed pieces were inoculated with the causative organism before dipping, a perfect stand of normal plants developed—not one showed any signs of Blackleg or Soft Rot.

Agri-mycin* 100 is doubly effective because it contains the wide-range antibiotic, Terramycin®. Terramycin prevents development of streptomycin-resistant strains, and at the same time actually increases the effectiveness of the streptomycin.

Your regular supplier of spray materials has Agri-mycin* 100 now. Use it this spring for complete control of Blackleg and Soft Rot and to help insure a top yield of high quality potatoes this crop year.

One bottle of Agri-mycin* 100 makes 100 gallons of solution

Agri-mycin* 100

*Trademark

A product of Pfizer

Chas. Pfizer & Co., Inc., Brooklyn 6, New York
World's largest producer of antibiotics
Terramycin® brand of Oxytetracycline

LETTERS
TO THE EDITOR

Plastic Greenhouse

Dear Editor:

In regard to the story on a plastic greenhouse in the December, 1954, issue, the question of snow loads and high winds bothers me somewhat. I wonder how the plastic house will behave under these conditions?

Hortonville, Wis. Reinhold Harp

You do not need to worry much about high winds and snow loads as far as the plastic goes. It will take very high winds up until almost May if the house is erected in late September or early October. If the framework is strong enough, the plastic will take almost any snow load. On the University of Kentucky house, the slope is enough so that snows slide off after getting over several inches deep. However, a freezing snow will not slide off. In this case, temporary posts can be erected on the purlines almost every 10 to 15 feet. According to E. M. Emmert of the University of Kentucky, a snow that put down two glass greenhouses did not bother eight plastic houses in the vicinity.—Ed.

Vegetable Areas of America

Dear Editor:

I certainly enjoyed your second article in the "Vegetable Areas of America" series. As a vegetable grower at the opposite end of the U. S. A. from the state of Florida, California, I can hardly wait until you run one on my own home state. The rivalry between Florida and California is well known, so you can see that I am especially interested now. However, in spite of the rivalry, I must say I was impressed with your account of Florida as a vegetable area of the United States.

California R. A. White

New Developments

Dear Editor:

I find your magazine most helpful. All the new varieties that are being developed, the new chemicals, and new developments in other fields are so interesting. I have learned a lot of useful facts from your "Letters to the Editor" column as well. I'm looking forward to the March issue.

Rye, N.Y. Phyllis Daly

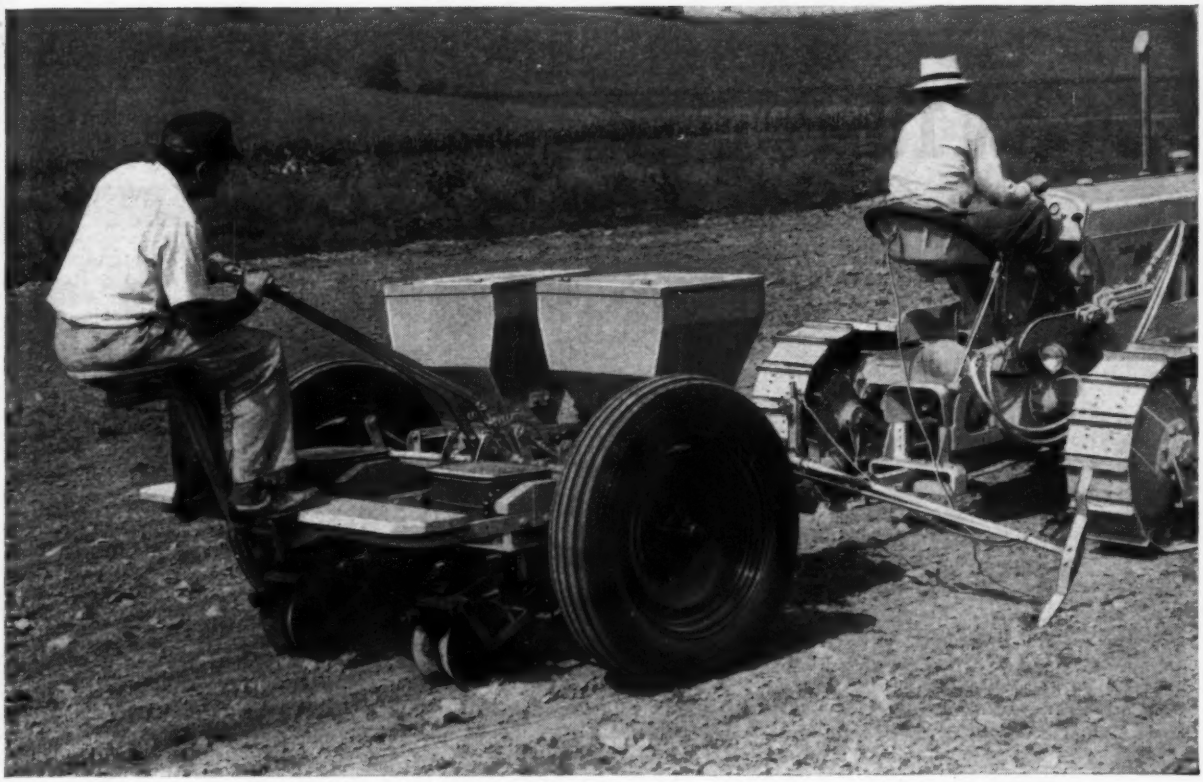
Another Watermelon

Dear Editor:

Can you tell me what variety of watermelon is pictured on the September cover of AMERICAN VEGETABLE GROWER?

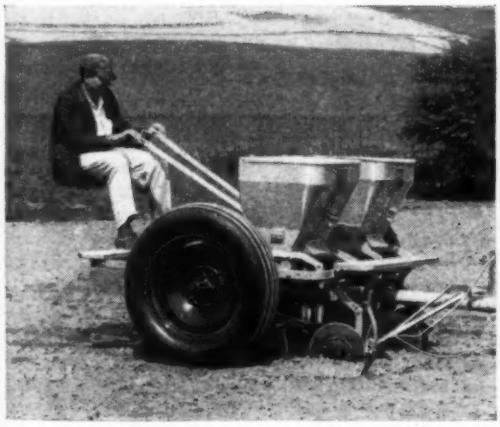
Montrose, Iowa Chris Christensen

USDA watermelon breeders in Charleston, S. C., where the new Charleston Gray watermelon was developed, say that the variety illustrated on our September cover is the Dixie Queen type of watermelon and probably is one of the new wilt resistant Dixie Queens.—Ed.



The sure-footed Oliver "OC-6" Crawler powers the fast, accurate Iron-Age No. 292 planter with Cole seed hoppers and bandway fertilization.

Upgrade your vegetable crop with a precision OLIVER IRON AGE PLANTER



The rugged Oliver Iron-Age vegetable planter carries 300 to 400 pounds of fertilizer per row, applies even or hi-lo bands. Large pneumatic tires carry weight without soil compaction...assures even depth of planting, fertilizing.

Big yields are great, but top quality is important, too. Both get their start at planting time. That's why vegetable growers are paying more attention to accurate placement of seed and fertilizer.

Only an Oliver Iron-Age has these two quality- and quantity-getting features...precision belt-feed bandway fertilizer placement, plus versatile Cole seed hoppers. And in addition, you get rugged construction, choice of hydraulic or hand lift, automatic clutch control of planting and fertilizing mechanisms.

You save labor, too, with an Oliver. In a single operation you plant and apply plant food according to the exact needs of your soil and crop. A specially designed fertilizer belt provides uniform flow, measures fertilizer amounts accurately. And bandway placement assures maximum fertilizer efficiency plus earlier, more uniform crop maturity.

Superaccurate Cole "double seed hoppers" provide extra versatility—wide range of seed spacing—no skips, no bunching. And you can alternately plant two crops in the same row. Seed plates are available for most truck and field crops.

Switch to a new Oliver Iron-Age vegetable planter and start your quality bonus, now.

The Oliver Corporation, 400 W. Madison St., Chicago 6, Ill.

OLIVER

OLIVER

"FINEST IN FARM MACHINERY"

See your OLIVER DEALER for quality

a new 18′ x 84′ greenhouse for only $250!

do it yourself with VISQUEEN® film

the only polyethylene in 16′ widths

No need to pass up high profits on out-of-season produce just because of high greenhouse building costs! Now, using VISQUEEN polyethylene film, you can build an 18′ x 84′ greenhouse yourself for as little as $250 . . . as compared to $4,000 or $5,000 for a glass house.

Fruits and vegetables actually grow better under VISQUEEN. And no wonder. VISQUEEN film lets in plenty of light and air, yet retains inside moisture so well that plants thrive on less-frequent watering. VISQUEEN is tough, stands up under severe temperature changes, shrugs off rain, hail, snow and sleet. Using an inexpensive double layer of plastic, heating costs are about *half* that of glass houses.

There's a VISQUEEN converter near you who'll be glad to tell you all about it. Use the coupon to get his name.

VisQueen® film...a product of

THE VISKING CORPORATION

World's largest producers of polyethylene sheeting and tubing

Plastics Division, Terre Haute, Indiana

In Canada: VISKING Limited, Lindsay, Ontario

In England: British VISQUEEN Limited, Stevenage

THE VISKING CORPORATION, BOX AV3-1410, Plastics Division, Terre Haute, Indiana

Please send me name of distributor of VISQUEEN film serving my area.

Name_____ Company_____

Address_____ City_____ Zone____ State_____

The Modern JOHN DEERE "40" TRACTORS
Have What Market Growers Want

"40" Tractor with wide, adjustable front axle and John Deere No. 480 Cultivator doing close, clean work in narrow-planted vegetable rows.

WHATEVER the size of your farm—whatever your crops—you'll be 'way ahead with the power farming advantages you can get only in a John Deere Tractor:

Economy—*"More economical than any other tractor I've owned"* and *"Easy on the pocketbook"* are often-heard statements from owners.

Dependability—Ask owners about that time-proved "40" valve-in-head engine, and they'll probably tell you it is one of the finest ever put into a tractor. It is a simple engine, easy to service, known everywhere for its low operating costs.

Adaptability—"General-Purpose" in every sense, with more than forty matching tools to select from. Full range of wheel treads. Does belt and PTO jobs.

Ease of Handling—Touch-o-matic hydraulic system and exclusive Load-and-Depth Control are just two of the many regular features to save your time and muscle. Recent improvements make steering and clutching easier than ever. And there's a new *remote* hydraulic cylinder for two-way control of integral and drawn tools.

Comfort and Convenience—Just try the deep, coil-spring cushion seat that's regular equipment on a John Deere! All tractor controls are at your finger tips.

Easy to Buy—Your John Deere dealer has a credit plan for your convenience. He will make you a good deal on your old tractor.

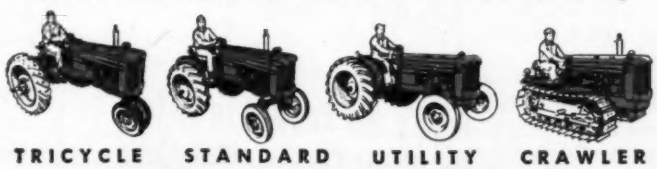
Service—*where* you want it—*when* you want it.

MORE THAN 40 MATCHED TOOLS TO CHOOSE FROM:

Plows of All Types	Cultivators
Listers—Middlebreakers — Bedders	Field Cultivators
Planters and Drills	Spring Tooth Harrows
Fertilizing and Side-Dressing Attachments	Tool Carriers
Disk Harrows	Tool Bars
Disk Tiller	Rotary Hoe
	Subsoilers
	Mowers
	Fork Lift
	Loaders

Plus many items of equipment made by other manufacturers which have been tested and cleared for use with John Deere "40" Tractors.

Choose the "40" that Fits Your Needs Exactly



TRICYCLE STANDARD UTILITY CRAWLER

Ask your John Deere Dealer for a Free Demonstration

JOHN DEERE
MOLINE, ILLINOIS

Send for FREE Literature

JOHN DEERE ● Moline, Ill. ● Dept. B98

Please send me free literature on:

☐ "40" Tricycle ☐ "40" Standard
☐ "40" Utility ☐ "40" Crawler

*Name*_____

*R.R.*_____ *Box*_____

*Town*_____ *State*_____

feet of manure
plication should
from five to seven
of heavy rains,
each new addition
r of course.

usset Mite
l by Malathion

o russet mite was
California and later
l New Jersey, grow-
omething like this:
s through my fields
are turning brown,
reason for it." The
eds of thousands of
russet mites.
showed that sulphur
l through the grow-
ted a mite build-up.
ever, disadvantages to
. It was found under
ons that several sul-
s were necessary to
der control. This pre-
of a sulphur residue
omatoes were going to
as one to two parts per
ur caused bluish iri-
tin cans plus a hydro-
or and off-flavor. Spe-
l to be installed to re-
ar.
s of the mite began to
Jersey, Rutgers Univer-
ists experimented with
cides and found mala-
most satisfactory mate-
leanup of the pest. Al-
insecticides were found
ll the mite, malathion
om several standpoints:
ther insecticides tested
ng for sulphur), mala-
s given no off-flavor in
canned tomatoes.
on's low mammalian tox-
ers no special hazards to
rator.

Malathion for Fruit

finding wide use in the
fruit because of its superi-
aphicide and an acaracide.
rols many other fruit pests
ye spotted bud moth, pear
ng moth and Oriental fruit
dition, malathion is effective
y scale insects on California
reas where grape leaf hopper
ped a resistance to DDT,
is being used against this
od effect. It is also useful
ication necessitates extensive
ntact, as in cranberries and
cialized fruits. Under such

flowers and ornamen

Dust Them off with Malathion

Truck farmers who have been having trouble with the Mexican bean beetle now have a new, effective weapon in the form of malathion. This insecticide, developed by American Cyanamid Company, is chemically related to parathion, but is much less toxic to man and beast.

In comparison tests, five per cent malathion gave the most complete control on Mexican bean beetles. When these malathion treated beans were

extremely effective weapon against a host of insects and mites which damage fruits, vegetables and ornamental plants —scales, aphids, mealybugs, and scores of sucking and chewing insects.

Malathion apparently comes closer to an "all-purpose" insecticide for home vegetable and flower gardens than any

Here's the Answer to DDT-Resistant Flies — Malathion

The USDA acceptance of malathion for fly control in dairy barns provides an answer to the problem of flies which have developed resistance to DDT and

garden insecticides. It
either alone or in com
fungicide.

Control of Scale

Scale insects can be
efficiently now, thank
ticides which require
and offer less risk of
than insecticides used
For example, most
insect can be contr
effectively with malat

Malathion, a devel
can Cyanamid Comp
ornamental field an
pound. A refinement
chemicals, malathion
secticidal properties
low order of toxicity
It is classed by the
partment of Agricul
safest insecticides t
icity to warm-bloo
tually less than tha

Malathion is effe
range of scales atta
evergreen trees an
other flowers, fru
house and house p
as a summer spra
stages, malathion
many species, bo
including soft bro
scale, Monterey p
scale, various le
dendron scale, oy
scale, magnolia s
scale, Florida re
others. Malathio
aphids (probabl
ornamental pe
miners and lace

Malathion for
in leading smal
as from well-k
distributors.

New Spray
Aphids and

Malathion,
oped by Amer
controls both
low toxicity
plants. Depe
festation and
doses range
half teaspoo

Aphids, al
scarcely visi
feed on leav
They carry
excrete a h
gous disease
lish themse
pin head,
hard to se
in the form

• Ho
green
norm

By C

OWN
the
sonal an
Edward
Hillsboro
found.

This gr
than 100
ly, but inc
ties of the
line crops
gated Ind
purposes.

Althoug
short grow
lengthened
greenhouse
He can th
produce 12
start in M
asparagus,
and peas in
in July, an
growing se
April with
squash and
orchards.

All plan
early and l
produce
That's an
handy gre
elaborate g
acres unde
glass frame
side of the

New Hampshire Farm Has a 12-Month Growing Schedule

Pumpkins stored in cold frames in front of small greenhouse at Holly Hill Farm. The greenhouse is used to start early-season plants and to ripen late-season tomatoes.

• Holly Hill Farm uses a small greenhouse to extend their normally short growing season

By CHARLES L. STRATTON

OWNING a greenhouse can make the big difference between seasonal and year-round produce sales, Edward Lievens, Holly Hill Farm, Hillsboro County, Hollis, N.H., has found.

This grower not only raises more than 100 acres of vegetables annually, but includes (other than 15 varieties of the more common crops) sideline crops like pumpkins and variegated Indian corn for ornamental purposes.

Although living in a state with a short growing season, Lievens has lengthened his normal season with a greenhouse, cold frames, and hotbeds. He can thus sell Holly Hill Farm produce 12 months of the year. Sales start in May from three acres of asparagus, swing over to strawberries and peas in June, beans and tomatoes in July, and continue throughout the growing season, ending the following April with the last of the winter squash and apples from 150 acres of orchards.

All plantings are aimed for the early and late markets when top-grade produce brings premium prices. That's another good reason for a handy greenhouse at Holly Hill. No elaborate greenhouse set-up here with acres under glass, but rather a small glass framework attached to the south side of the farm workshop. Heated by a small steam boiler, it has plenty of bench space and room enough for a couple of men to work in comfort. Working right in with the greenhouse is a cold frame attached to the front. Across the road are a dozen or more hotbeds heated by electric cables.

First-of-the-season crops are timed by starting them early in both the greenhouse and the hotbeds. As he grows plants in the greenhouse for farm use only, Lievens prefers to start his hotbeds first, planting the seed in flats around the middle of February. Later, he starts the boiler and heats the greenhouse for a couple of months as he swings into production with more plants for his fields.

Lievens harvests several crops off a single piece of land in a season. Some of this is due to his early starting of plants. Cauliflower, tomatoes, and cabbage are a few of the early plants that find their way into rotation programs after early crops are harvested. All crops are rotated and fertilized. As soon as the last crop in each field is harvested, it is seeded down with winter rye.

There is an excellent sweet corn market throughout the section and Lievens raises several varieties in order to have early, medium, and late crops to thoroughly cover the season.

Tractors and low-bed trailers are used for harvesting in most of the fields. He finds they save lifting, avoid wear and tear on his trucks, and don't dig up the fields. A tractor can move into a field and haul two trailer-loads of vegetables to the packing plant. The loaded trailers are left outside for the packing crews to work on while the tractor returns to the field with empties.

Sales are spread through a number of outlets in both the immediate vicinity and the Boston area. During the season several trucks loaded with produce leave for Boston five nights weekly. Trucks also deliver to stores in the immediate vicinity. Several stores and roadside stands feature Holly Hill Farm vegetables exclusively in season. One man is kept on the road taking orders and delivering to these outlets.

The only advertising Lievens does, other than using the Holly Hill Farm name in connection with sales of produce in stores, is a large flower garden across the road from the packing house. Customers are allowed to pick a bouquet when purchasing vegetables.

Other good customers are the people who like to pick their own vegetables. After the main crop of strawberries, beans, or tomatoes is harvested, Lievens lets these customers in to finish the picking. They do the job at a profit without outlay for containers, labor, and packing. Lievens claims he cannot afford to have his men pick the remainder of the crop when other crops require picking.

Lievens harvests about 25 tons of

(*Continued on page 37*)

Soluble fertilizer or starter solution used at the same time transplants are set in the field results in earlier maturity of plants.

Get Your Plants OFF TO A GOOD START

Concentrated "starter" fertilizer solutions will make your vegetable plants sturdy, eliminate transplanting shock, give you increased yields

By **ROBERT L. CAROLUS**
Michigan State College

MANY chemical salts containing plant nutrients are today being formulated into fertilizers for use as starter solutions and other purposes. A starter solution is a mixture of water soluble chemicals that contain high concentrations of plant nutrients. To be of maximum usefulness and efficiency the percentage of nitrogen (N), phosphate (P_2O_5), and potash (K_2O) should total at least 50 per cent.

Some special formulations of "plant food" mixtures contain small quantities of trace elements such as magnesium, boron, manganese or copper, growth regulating substances, vitamins, antibiotic materials, and other ingredients which purportedly stimulate plant growth. The claims for many of these products will not bear close scrutiny. If a trace element is deficient in the soil, these products seldom contain a sufficient quantity of the nutrient to correct the trouble, unless they are used in large quantities as fertilizers.

The same quantity of nutrients contained in tablet, bottled, or small packaged products can frequently be duplicated at much less cost in a regular concentrated "starter" fertilizer purchased in 3- to 50-pound bags. Some of the soluble phosphate is readily precipitated when concentrated fertilizers are dissolved in very hard water and as a result a white, milky, calcium phosphate compound is formed. To assure a clear solution, rain water or water low in calcium should be used.

Starter solution fertilizers are superior to regular fertilizers for certain purposes because they are completely soluble in soft water and contain high concentrations of plant nutrients. Regular fertilizers for field application contain forms of nitrogen and phosphate that may be only slightly soluble in water.

In addition, a large proportion of a fertilizer containing less than 40 per cent of plant nutrients consists of materials that are not required for plant growth. Such fertilizers, therefore, can be formulated from cheaper materials and are not injurious when applied at normal field application rates. However, highly concentrated fertilizers, containing from 60 to 80 per cent of plant nutrients, provide for a higher localized application of nutrients than could be safely applied with a regular fertilizer.

For Greenhouse and Field Crops—Greenhouse operators are finding in concentrated fertilizers a means by which large quantities of nutrients can be applied to their crops without causing a damaging increase in the soluble salt content of their soils. Small suction devices attached between the water tap and the hose enable growers to apply soluble fertilizers to their crop at the time of watering.

Using such a device, adequate nutrients may be effectively applied precisely when they are required to promote the most satisfactory type of plant growth. Similarly in the field, where irrigation equipment is available, soluble fertilizer may be added to the irrigation water for supplying added nutrients when required to improve plant growth.

For Plant Growing—In order to produce thrifty, sturdy plants for field planting, it is advisable to avoid over-fertilization of soils in which they are grown. Frequently this practice is over-emphasized and plants are quite low in nutrients at time of field setting. Watering tomato, pepper, melon and cucumber, cabbage and cauliflower plants with nutrient solutions as needed during their latter stages of development, and particularly 48 to 72 hours before removing to the field, has paid dividends in rapid recovery from transplanting shock and in earlier maturity.

For Transplants—Whenever water is used in transplanting, the possibility of using soluble fertilizers should be considered. Using 4 pounds of a concentrated fertilizer per 50 gallons of water, or 2½ tablespoonfuls per gallon, and applying the solution at the rate of one-half pint or a teacupful per plant is equivalent to about 14 pounds of fertilizer per acre of tomatoes spaced 3¼x5 feet.

This small quantity of fertilizer is very effective due to its concentrated application in the immediate vicinity of the plant. If a 10-52-17 analysis is used, in immediate effect it is equal to a broadcast fertilizer application of approximately 35 pounds of N, 160 pounds of P_2O_5, and 60 pounds of K_2O per acre.

The use of starter solutions in transplanting shipped-in tomato plants has resulted in better stands, earlier recovery, rapid early development and earlier maturity. Increases in yield from the use of starter solutions have ranged from 1 to 5 tons per acre, depending on the fertility of the soil and the vigor of the plants.

If the plants have been watered several days before transplanting with a fertilizer solution containing an ounce of fertilizer per gallon, their need for and response to the fertilizer in the starter solution will be somewhat reduced.

In situations where it is inconvenient to use starter solutions at transplanting, or with potted or banded plants, it is highly advisable to water with fertilizer solutions several days before removing to the field. However, if convenient, it is desirable to use starter solutions both before and during transplanting operations.

Use in Sprays—Starter solution fertilizer and urea may be applied as nutrient sprays or with fungicides or insecticides to the foliage of vegetables. The higher nitrogen-containing materials are generally the most useful. Solutions should not contain more than 4 pounds of fertilizer per 100 gallons of water, unless previous experience with a particular material has indicated that a higher concentration does not injure the foliage.

For Sidedressing Growing Crops—On the basis of their nutrient content of N-P_2O_5-K_2O, highly concentrated fertilizers generally cost more than twice as much as regular fertilizers. On plant beds or in greenhouse crop production their low salt value per unit of nutrient content frequently offsets their cost. In special cases where phosphorus deficiency is suspected in the field, they may be more effectively used in correcting this trouble than regular fertilizers that contain lower percentages of less soluble phosphorus.

Recommendations — There are many hundreds of formulations of concentrated fertilizers. Growers would be well advised to make their choice primarily on the basis of the cost of their nutrient content. All of them can be used at rates of up to 1 ounce per gallon in making starter solutions to be applied at rates up to one-half pint per plant or 2 quarts at 5- to 10-day intervals to flatted plants.

High phosphate fertilizers are particularly well adapted for use in transplanting tomatoes, peppers, and eggplant during early spring. Medium high phosphate fertilizers are most effective for melon and cucumber plants and in transplanting cabbage and cauliflower. Those with more nearly equal N-P_2O_5-K_2O content are general-purpose mixtures for use in applying fertilizer through irrigation, for sidedressing outdoor crops, and in greenhouse crop production.

THE END

FORMULATIONS FOR STARTER SOLUTION FERTILIZERS

Materials: Chemical Name	Per Cent Composition Nitrogen (N)	Phosphate (P_2O_5)	Potash (K_2O)
Synthetic Urea CO $(NH_2)_2$	46		
Nitrate of Potash KNO_3	13		44
Di-Ammonium Phosphate $(NH_4)_2HPO_4$	21	54	
Mono-Ammonium Phosphate $NH_4H_2PO_4$	12	61	
Mono-Potassium Phosphate KH_2PO_4		52	35

Formulations:

A.	10-52-17	50% Di-Ammonium Phosphate 50% Mono-Potassium Phosphate
B.	23-27-11	25% Potassium Nitrate 25% Urea 50% Di-Ammonium Phosphate
C.	19-26-19	25% Potassium Nitrate 25% Urea 25% Di-Ammonium Phosphate 25% Mono-Potassium Phosphate

PARTIAL LIST OF COMMERCIAL SOURCES

Trade Name	*Analysis*	*Source*
Group I—High Phosphate Analysis		
Take Hold	10-52-17	Victor Chemical Works, 155 N. Wacker Dr., Chicago 6, Ill.
Armour's All-Soluble Plant Food	15-52-9	Armour Fertilizer Works, Hurt Bldg., Atlanta, Ga.
Bonro	10-50-10	Swift and Company, Union Stock Yards, Chicago 9, Ill.
Group II—Medium Phosphate Analysis		
Kap Co #1	15-30-15	The Summers Fertilizer Co., Inc., McKeesport, Pa.
Plant Prod	15-30-15	Plant Products Corp., Kennedy Ave., Blue Point, L.I., N.Y.
Nu Way	15-30-15	Plant Food Company, Streator, Ill.
Dixco	15-30-15	Marion Chemical Co., Marion, Ohio
Miracle-Gro	15-30-15	Stern's Nurseries, 404 William, Geneva, N.Y.
Hy-Gro	13-26-13	McCormick and Co., 414 Light St., Baltimore 2, Md.
Very High Plant Food	6-25-15	Miller Chemical & Fertilizer Co., 2226 N. Howard St., Baltimore 18, Md.
Instant Vigoro	19-28-14	Swift and Company, Union Stock Yards, Chicago 9, Ill.
Ferti-Liquid	10-20-10	Clover Chemical Co., Box 10865, Pittsburgh 36, Pa.
Group III—Equal Nitrogen, Phosphorus, and Potassium Analysis		
Folium	20-20-20	Monsanto Chemical Co., 1700 S. 2nd St., St. Louis 4, Mo.
Nurish	20-20-20	Naco Fertilizer Co., Findlay, Ohio.
Gro-Stuff	20-20-20	American Chemical Paint Co., Ambler, Pa.
Kap Co. #3	20-20-20	Kelley Agricultural Products, McKeesport, Pa.
Dupont Soluble Plant Food	19-22-16	E. I. du Pont de Nemours & Co., Wilmington 98, Del.
Ra-Pid-Gro	23-21-17	Ra-Pid-Gro Corporation, P.O. Box 13, Dansville, N.Y.

The NEW LOOK in Hotbeds and Cold Frames

Lightweight materials and laborsaving ideas will help you make year-round use of your frames

By
J. R. KAMP and G. M. FOSLER
University of Illinois

NEW materials have not revolutionized hotbed construction in most nurseries and greenhouse ranges. Yet, with a little ingenuity we can greatly expand our effective growing area to good advantage using some of these newer products. Moreover, new ideas in construction and operation can also greatly increase efficiency and reduce costs. Here are a few suggestions which may merit your attention.

The shortage of cypress and redwood lumber, and the ravages of termites and decay, have gradually forced many growers to use other types of construction. Concrete frames, while very permanent, are costly and not entirely satisfactory because they are colder than similar frames of wood. And they are just as dark. Concrete (or haydite) blocks provide better insulation than reinforced concrete, but are also costly.

If you are looking for a satisfactory non-wood material, transite offers a concrete substitute which is hard to beat, for it is easy to handle and highly durable. The flat sheets are better adapted for this purpose than the corrugated. Transite can be sawed to fit and bolted to a wooden or metal structure. Some of the framework can be eliminated if the sheets are anchored in concrete footings.

While transite has much to offer, we suggest trying flat plastic sheets instead. The fiberglass - reinforced polyester plastics (such as Corrolux and Alsynite) are probably best. Not only will this material be immune to termites and decay organisms, but it is also easy to handle. Furthermore, it lets in much needed light. This quality would be especially valuable on the south wall of a frame. It is here that the shadow of the wall often greatly reduces the effective growing space inside.

Plastic on the other walls would permit entrance of considerable indirect or reflected light. We are told that the polyester plastics transmit roughly 80 per cent of available light and have satisfactory heat transmission qualities and combustion points. At present, prices range from 75 cents to $1.25 per square foot, but they promise to drop rapidly as production is stepped up.

A welded frame (e.g., made of old used steam pipe) covered with plastic sheets should last for many years. This same plastic material could also be fastened with screws to sash frames. Everyone knows how unwieldy conventional glass sashes are. Then why not remove the glass entirely and simply cover the wooden frame with a single sheet of plastic? If both the sides and top are of plastic, the entire hotbed or cold frame will be both *light* and *lightweight* and will provide excellent space for growing or hardening off plants.

Nevertheless, we recommend using plastic on a limited scale until it has proved itself to you. Condensation and consequent drippage from the plastic-covered sashes could be a problem. The lightweight sashes would also have to be anchored down well to minimize wind damage.

The most promising ideas, however, are concerned with routine frame operations and with making these frames useful over a greater part of the year. Let us first look at the operations phase.

Ventilation—Where large numbers of frames are in use, proper ventilation becomes a major item of expense. When sudden storms blow up, we cannot get the frames closed fast

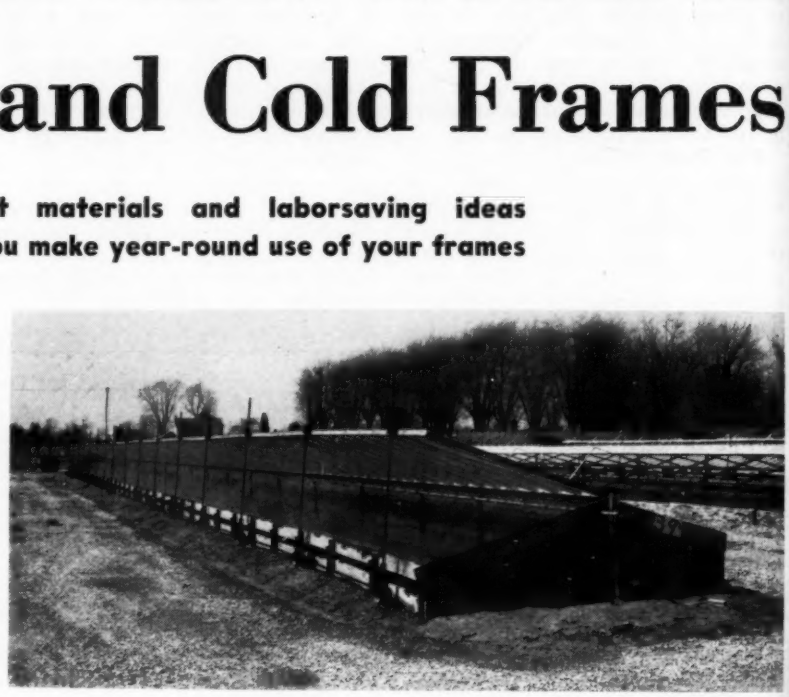


Figure 1 (above) — Water line extending length of frame, with booster pump, enables one man to ventilate, water, fertilize, spray.

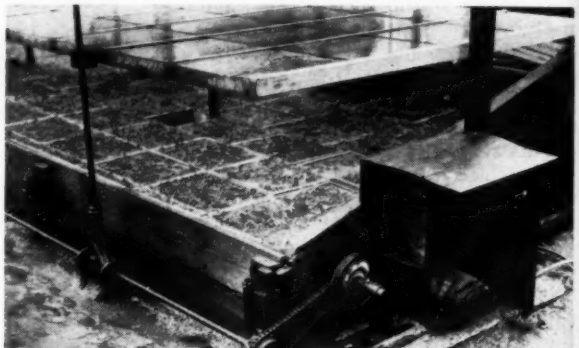


Figure 2 (right) — Worm-gear mechanism raises or lowers row of sashes at one time.

enough to prevent damage to some plants or the sash. Likewise, when the sun comes out suddenly, the uncovering process takes time and labor that is needed elsewhere.

The worm-gear mechanism, shown in Figures 1 and 2 and actually devised by a wholesale grower of vegetable plants, operates a whole row of sashes at once. At the push of a button, the motor pictured in Figure 2 rapidly raises or lowers a complete span. Thus, one man could adequately tend a number of such frames in all kinds of weather.

Watering—Another laborsaver is to be seen in Figure 1. Under the ridge is a water line extending the entire length and fitted with Skinner nozzles. Water enters one end of the pipe from a portable booster pump. By slowly rotating the Skinner line, the entire frame is adequately and uniformly watered in several minutes. Imagine doing this job by hand! The booster pump may also be fitted with a fertilizer and insecticide injector—thus accomplishing two other operations in a most efficient manner.

By this method, many frames can be properly ventilated, watered, fertilized, and sprayed by a single man. The savings on labor alone should show the value of the mechanisms. Add to this the production of *better* plants because you *can* afford to perform these operations when and as often as necessary.

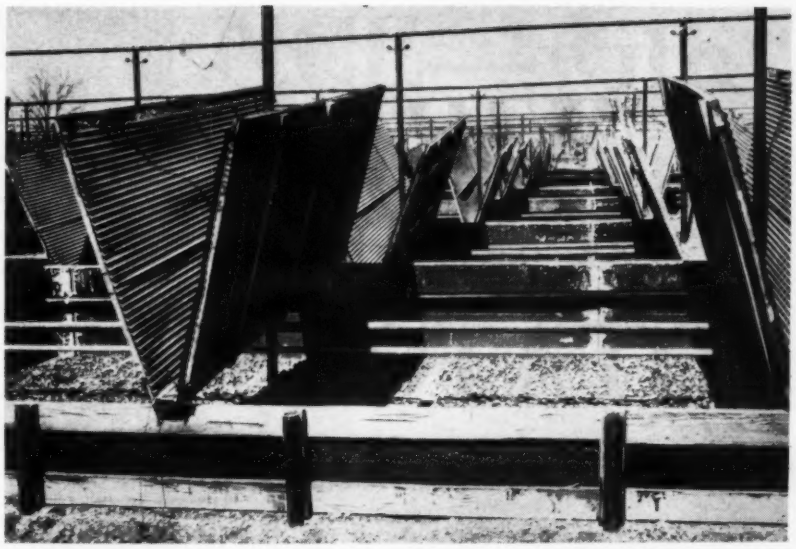


Figure 3—Novel method of hinging butterfly sash.

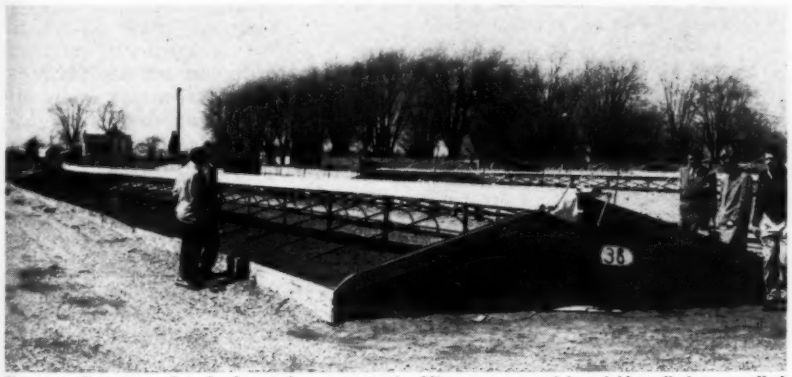


Figure 4—By means of a simple crank arrangement white canvas panel is quickly rolled or unrolled.

"Gang" Sashes—The "butterfly sashes" in Figure 3 are covered with corrugated sheet metal, but plastic would be far more suitable. These were in use on frames in which vegetable plants were being hardened off. While this arrangement might not appeal to many growers, the hinging of the sashes as shown might be an idea to consider. Wire cables extend from the sashes up to rotating pipes seen on top the vertical supports. By rotating a pipe manually (or with an electric motor), an entire gang of sashes can be efficiently operated.

Figure 4 illustrates a type of frame covering which has been employed by some growers for many years. Instead of expensive glass sashes and auxiliary equipment, a continuous panel of white canvas or muslin is used. A pipe fitted with a simple crank at one or both ends is used to quickly roll up or unroll the canvas. Also pictured is the novel idea of utilizing bent sections of 1¼-inch pipe at about 4-foot intervals as supports for the covering material.

It is suggested that heavy-grade clear vinyl plastic instead of canvas be used on this type of frame. This material is durable, transparent, and inexpensive. It is waterproof, and if torn, can be mended easily.

(*Continued on page 32*)

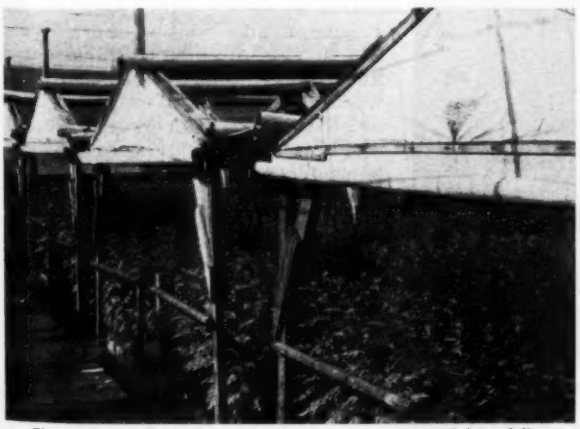


Figure 5—Dual-purpose frame, for use in spring and late fall.

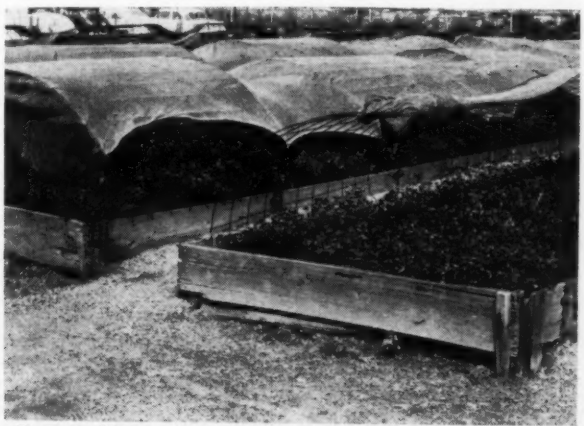
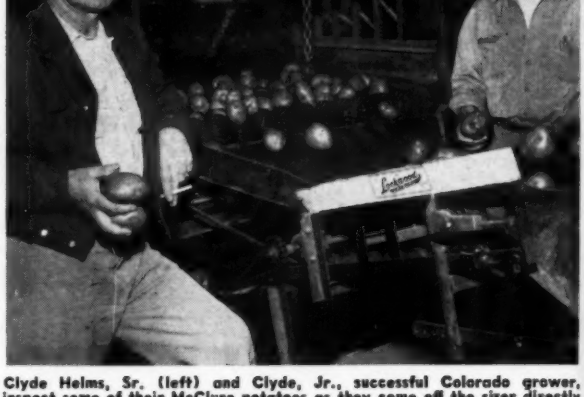


Figure 6—Woven wire serves to hold cloth, for necesary shading.

WHY WASH POTATOES?

Clean, waxed potatoes have consumer appeal that's measured in dollars by the grower



Clyde Helms, Sr. (left) and Clyde, Jr., successful Colorado grower, inspect some of their McClure potatoes as they come off the sizer directly behind their large 48-inch washer.

By T. J. LOCKWOOD

MORE revolutionary changes have taken place in the Irish potato industry in the past 15 years than in the preceding century. Among the major developments affecting both producer and consumer are the washing, waxing, and packaging of potatoes. These developments are the direct result of competition offered by other produce and fruits, consumer demand for smaller units of purchase, and high freight rates. Unwashed potatoes weigh more and as a result cost more to ship.

Since many of the large producing areas must of necessity ship their potatoes great distances, they have had to wash, grade, and ship only the highest grades, in order to attract consumers away from local unwashed potatoes. This is forcing the close-to-market growers to resort to washing.

A big problem now facing the industry is to work out a program for disposing of off-grade potatoes to starch and alcohol plants and for livestock feeding. This field has hardly been touched, but through co-operative effort we can expect much activity along this line. With it will come a stable potato industry.

European producers are just now starting to wash potatoes for human consumption. They, however, will not have to cope with a surplus problem because of their effective starch and stock-feeding program, which has been in operation for years. Germany feeds approximately half of her total production to stock, mostly hogs—and these potatoes are washed and cooked. About 30 per cent of Holland's potato production goes for stock feed and to starch plants.

An example of the radical change that washing accomplishes is the experience of the Herbert Campbell Company at Hastings, Nebr. In 1923, when the firm was set up, potatoes were handled either in bulk or in uneven weights of approximately 12-pound bags. In those days, too, Nebraska potatoes were considered about the poorest quality potatoes on the market, bringing lowest prices.

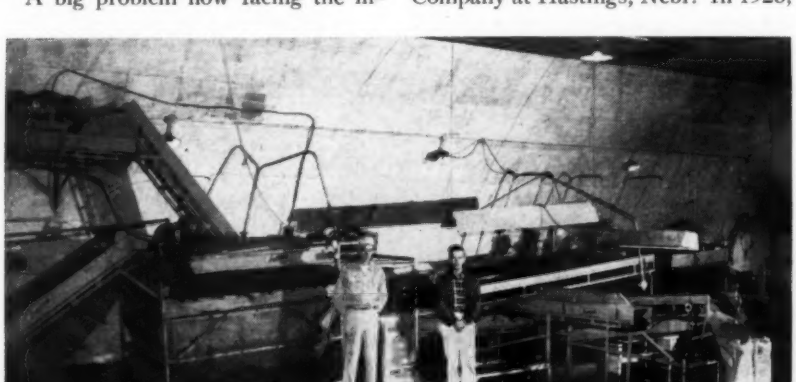
In the fall of 1937 the company installed washers in their warehouses. The improved appearance of their washed red potatoes reversed their market position and they brought the highest prices on the market.

From the small 2-foot washer and small grader which cost about $300, they now have a modern warehouse equipped for washing, drying, waxing, and grading. In addition, packaging equipment to handle consumer units of 10 and 25 pounds has been installed, together with automatic weighers, automatic staplers, sewing machines, and closures.

Some of the users of washers in the important potato state of Maine, in the fall and early winter of 1953, were Jacob Shur of Island Falls, Herschel Smith of Mars Hill, and T. E. Houghton and Sons of Fort Kent. The success of these washing activities resulted in the installation of washing equipment by a large number of other growers during the fall and early winter of 1954. One of the most outstanding and probably the largest installation, which also includes facilities for grading, sizing, and automatic packaging in consumer-size bags, is that of the F. H. Vahlsing Company of Easton.

Out in Colorado, Clyde Helms, Sr., and Clyde, Jr., are noted for being good potato growers and packers. Both started in the potato deal some 20 years ago.

(*Continued on page 37*)



About 500 carloads of potatoes are washed yearly by the Mutchler Potato Company at Northwood, N.D. The Mutchlers not only wash the potatoes grown on their own farms but do custom work for other growers. Peak daily capacity of their plant is about 10 carloads. They use the flume system of conveying potatoes from storage bins to washing plant. James I. Mutchler, at right in above photo, says they contemplate a new storage with facilities for packaging in consumer-size bags.

INDEPENDENCE—with A GARDEN TRACTOR

No more outside help is needed by these Massachusetts cucumber growers, now that they have a mechanical helper

By BETTY BRINHART

Cultivating in 2½-week-old Massachusetts cucumber planting. Weekly cultivations last season kept the field clean of weeds and the cukes growing at their best.

NO other branch of truck gardening requires the diversity of operations to produce a good crop as does cucumber growing. From the moment they are planted until the season is over, cucumbers require constant attention.

In Massachusetts, which is known the country over for its fine vegetables and shade-grown tobacco, the average cucumber planting is two or three acres. The majority of these small growers must depend upon the large tobacco growers for their land preparation, planting, and cultivation.

If the tobacco plants were set out earlier in the season, this plan would work out fine. But, as it is, the two crops are planted simultaneously. The small cucumber grower must either have his field planted before the middle of May, and take his chance with late frost, or wait until tobacco planting is over and risk getting his cucumbers on the market too late.

Until last spring, we were compelled to depend upon this uncertain help. No matter how late the season, we had to wait patiently until the busy tobacco planter had a spare moment. Last spring, to counteract this inconvenience, we decided to purchase a 2½ h.p. David Bradley garden tractor, with essential equipment.

Because of a 14-inch stand of rye on the field, we had a neighbor turn it under and prepare the land for planting. We took over from there.

With a neat, compact planter, which fits behind the tractor, we planted and fertilized the entire two acres. While doing so, we discovered we were able to seed down 10 per cent more of the field. Since we were going to do all the cultivating with our small tractor, it was no longer necessary to leave the 8-foot stretch on both ends of the field for the larger tractor and cultivator to turn around. This meant more profit from a larger crop.

When the small plants reached two inches, we began cultivating to air the soil about the roots, and to discourage weed growth. We straddled the rows, then went back and cultivated the 6-foot aisles. We found this work easy. The tractor was so light to handle that our 8-year-old son took it up and down the aisles several times.

Other seasons, when hired help was necessary, the weeds usually got a good start before the worker showed up. This meant hours of hoeing under the hot sun. And because the soil had not been sufficiently worked, the plants were never large and robust. Last season we made a practice of cultivating the entire field once a week. This kept the plants growing at their best, and the field clean of weeds.

When the many vines began creeping out into the aisles, we stopped cultivating and took an account of our expense. Including the spring plowing, seed, fertilizer, gas, and spray, it cost us exactly $34.45. Other years, when outside help was used, our bill was well over $65. The tractor was already paying for itself. We had the satisfaction of doing our own work, too, and of seeing the results in a good, healthy field of vines.

During cucumber picking time, the tractor, again, came in handy. The filled baskets were brought off the field in a small trailer pulled behind it. Before, the baskets had to be carried off by hand.

Even with the added expense of purchasing the tractor and its necessary equipment, we came out ahead on last year's crop. The field received constant attention which resulted in a bumper crop of cukes. The extra 10 per cent of the field that had never been planted before brought in more than its share.

We benefited in other ways, also, by purchasing this small garden tractor. Since the field was free of weeds, it was easier to pick, which meant more bushels could be picked in one day. This, in turn, meant more of the better-grade cucumbers went to market.

Our tractor has paid for itself in many ways during the past year, and will continue to do so as time goes on. This will mean more profit and less expense in raising our crops. Nothing else could be of greater aid to the small truck gardener than a garden tractor. I know, for certain, that we will never be without one again.

THE END

STATE NEWS

- **Ohio Tomato Champions Grow New Hybrid Variety**
- **Penn State Urges Use of Cover Crops**

Tomato Champions

OHIO—The champion tomato growers in the Top Ten Tomato Club this year are A. G. Detwiler, Delta, and Herman and Wade Wolf, Toledo. Eugene Wittmeyer, Ohio State University extension horticulturist, announced.

Detwiler grew 27.3 tons of tomatoes per acre in the 3- to 15-acre class and the Wolfs grew 22 tons in the 15-acre and over class. The 1954 Ohio tomato crop averaged 12 tons per acre. While that's the highest average yield on record, it's still only about half what the champions grew, Wittmeyer pointed out.

Both growers used a new hybrid F-2 variety and both used starter fertilizer in transplant water. The Wolfs used Rutgers variety on part of their acreage.

Both growers used greenhouse plants. Detwiler set plants 3 feet apart in 6-foot rows on May 13, while the Wolfs set their plants 4 feet apart in 4-foot rows May 24-27.

Detwiler sprayed his crop 7 times to control diseases and included TDE insecticide to control tomato fruit worm. The Wolfs dusted 4 times early in the season and sprayed twice later. They added TEPP and TDE to control aphis and tomato fruit worm.

Detwiler plowed down 800 pounds of 0-20-20 fertilizer per acre and deep-drilled 800 pounds of 4-16-16 per acre after plowing. The Wolfs plowed down 600 pounds of 0-20-20 per acre, deep-drilled 800 pounds of 3-12-12, and side dressed the plants with 200 pounds of 3-12-12 per acre. Both growers had well-drained fields with sod crops in the rotation.

The top 10 per cent of tomato growers contracting with participating processors are members of the Top Ten Club. Membership this year is 130. The contest is sponsored by the OSU Agricultural Extension Service, Ohio Canners' Association, and the Baltimore and Ohio Railroad.

Potato Publicity

A $100,000 promotional and educational program has been approved by the Long White Potato Advisory Board, to promote California Long Whites in every market in the U.S. during 1955, reports Arnold Kirschenmann, chairman of the board. This budget is about four times the $25,000 established by the 1954 board.

Use of Cover Crops Urged

PENNSYLVANIA—Greater use of cover crops in commercial vegetable fields was urged by Dr. John B. Washko, Penn State agronomist, in an address at the Pennsylvania Vegetable Growers' annual meeting.

Canning crops often occupy the land for relatively short periods of the growing season, and thus can be followed by cover crops. This will not only protect the soil but also improve it, Dr. Washko said.

He classed the two types of cover crops as those needed to provide ground cover and organic matter, such as ryegrass and rye, and those needed to accumulate both nitrogen and organic matter, such as hairy vetch and crimson clover.

For early vegetable crops, soybeans or sudan grass can be seeded and turned under as a green manure crop in September, when vetch or ryegrass can be seeded for winter cover and turned under the following spring. Sweet clover can be seeded with canning peas in the spring.

Beneficial results from use of such cover crops, said Washko, are: soil is protected from erosion; losses by leaching are minimized; structure and water-holding capacity of the soil are improved; nitrogen supply is increased if a legume is grown; organic matter is supplied which releases nutrients on decomposition, and increased yield and quality of crops is obtained.

Janet Cutting (left), of Cleveland, will represent the Ohio vegetable industry during 1955, having recently received her crown from Ann Michael, of New Carlisle, who was queen in 1954.

Veg Association Changes Name

MAINE—The third annual meeting of the Maine Vegetable Growers Association was held during the Agricultural Trade Show at Lewiston on January 18. In order to become incorporated it was voted to change the name to Pine Tree Vegetable Growers Association. Officers for 1955 are: Frederick J. Witherly, Bangor, president; Harry E. Prout, Bowdoinham, vice-president; Robert W. Paulson, Orono, secretary-treasurer.

Hugh Tuttle, market gardener of Dover, N. H., in his talk on vegetable marketing, told about the Tuttle farm operations which go back 10 generations on the same farm.

Association plans for 1955 include Maine Vegetable Week to coincide with National Vegetable Week, also a vegetable queen program, the queen to be selected at the annual meeting next year.

W. Sherman Rowe, the "dean" of this state's county agents, has retired after 34 years of service to Cumberland County farmers. Fellow extension workers presented him with a slide projector at a recent conference of county agents.—*Robert W. Paulson, Sec'y, Orono.*

Onion King

MICHIGAN—Kenneth Trapp, Beulah, received the title of "Onion King of Michigan" at the annual banquet of the Michigan Muck Farmers at Michigan State College during Farmers' Week, February 7-11. This is the fourth time Trapp has won the title.—*Howard Trapp, Sec'y, Michigan Celery Promotion Assn., Beulah.*

(*Continued on page* 33)

Ohio Vegetable and Potato Growers Association recently elected the following officers for 1955: Standing, from left: Norman Miller, Toledo, director; E. C. Wittmeyer, Columbus, secretary; Ferris Owen, Newark, director; Lee V. Gaffin, Columbus, treasurer. Sitting, from left: J. C. Basquin, Big Prairie, vice-president; Leonard Bettinger, Swanton, 1st vice-president; Clinton Seitz, Cincinnati, president; Vernon Kraushaar, Cleveland, vice-president; and Kenneth Zellers, Hartville, vice-president.

Answering Your QUESTIONS

Don't let your questions go unanswered. Whether large or small, send them with a three-cent stamp for early reply to Questions Editor, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

POTATO TOP BEATER

I read in the October, 1954, issue of AMERICAN VEGETABLE GROWER of a potato top beater used in Alaska. I would like to know where I could obtain one of these, or plans for one.—Michigan.

Write C. Ivan Branton, Agricultural Experiment Station, Palmer, Alaska, for information on the potato top beater.

PLASTIC FOR GREENHOUSES

What companies furnish plastic for covering greenhouses as described in the December, 1954, issue of AMERICAN VEGETABLE GROWER?—Massachusetts.

Polyethylene film for building a greenhouse can be obtained in large amounts from E. I. du Pont de Nemours & Company, Film Dept., 1007 Market St., Wilmington, Del.; The Visking Corporation, Plastics Div., Terre Haute, Ind.; or the Reynolds Metals Company, 3840 Georgia St., Gary, Ind. The Reynolds plastic is called Reynolon.

RANGER BUSH-BEAN

Can you tell me where to buy seeds of the Ranger bush-bean, the All-America winner of some years ago?—New York.

Associated Seed Growers, Inc., 205 Church St., New Haven, Conn., released this variety a few years ago and probably is the only source of it.

SPINACH HARVESTER

I would like to obtain information on a spinach harvesting machine, one that will clip just above the ground for the packaging trade.—Ont., Canada.

The Hume Equipment Co., Mendota, Ill., make the machine you want.

SHIPPING PINK TOMATOES

With reference to Louis Rauth's shipping of Florida tomatoes "in the pink" (AMERICAN VEGETABLE GROWER, December, 1954), how high can the pink tomatoes be safely tiered without danger of crushing?—Missouri.

Mr. Rauth never packs more than one tier deep in a carton.

HARVEST QUEEN MELON

Where can I get seed for the Harvest Queen melon pictured in the January issue of AMERICAN VEGETABLE GROWER?—Indiana.

Seed is available from the introducer of the Harvest Queen, the Joseph Harris Seed Co., 60 Moreton Farm, Rochester 11, N.Y.

FILM BAGS FOR POTATOES

Is it practical to use film bags for potatoes?—Wisconsin.

Polyethylene film bags are becoming more and more popular among potato packers. An increasingly large percentage of potatoes are going to market washed and packed in bags. We are sending our reader tearsheets of a recent article in AMERICAN VEGETABLE GROWER on this subject.

GLOBE ARTICHOKE

Where can I get seed for the globe artichoke pictured in the January issue of AMERICAN VEGETABLE GROWER?—Colorado.

Seed may be obtained from the following nurseries: Armstrong Nurseries, Ontario, Calif.; Stribling's Nurseries, Merced, Calif.

GREENHOUSE PLANTING

I would like to have some information on greenhouse planting.—Connecticut.

Several articles on greenhouse planting are scheduled for coming issues of AMERICAN VEGETABLE GROWER.

ACREAGE GUIDES

Reductions recommended for the summer and fall crops

ACREAGE-MARKETING guides for 1955-crop summer and fall vegetables for fresh use, summer melons, vegetables for processing, sweetpotatoes, and late potatoes were issued by the USDA on January 31.

Reductions of 1 per cent in total acreage for fresh summer vegetables, 1 per cent for fresh fall vegetables, 12 per cent for summer melons, and 1 per cent for vegetables for processing are recommended. The guide for sweetpotatoes is a planted acreage equal to that in 1954. The planted acreage guide for late potatoes is 5.5 per cent less than the acreage planted in 1954.

The 1955 guides for 16 fresh summer vegetables total 494,490 acres to be available for harvest, compared with 499,470 acres for harvest last year. For 15 fall vegetables the guides total 269,500 acres, compared with 271,600 in 1954. For the two summer melon crops the guides total 393,200 acres for harvest compared with 445,570 last year.

No Change in Sweets

The guides for vegetables for processing and sweetpotatoes are on a planted acreage basis. For 9 vegetables for commercial processing the guides total 1,682,455 acres to be planted, compared with 1,699,130 acres planted in 1954; and for sweetpotatoes, 354,000 acres, which is equal to the acreage planted in 1954.

The late crop potato acreage guide, by states, amounts to a national total of 1,023,500 acres. The planted acreage last year was 1,083,400. With average yields, the probable production from the 1955 guide acreage would be 272 million bushels of potatoes—about 5 per cent less than in 1954. The supply, however, should be sufficient to meet requirements.

Guides for winter and spring vegetables were announced by the USDA last fall. The guides are issued seasonally prior to planting time and are designed to assist vegetable growers in planning production. A more detailed report on the 1955 summer and fall guides is available from your state extension service. THE END

Are you planning a roadside market? Working drawings for an attractive, easy-to-build stand are available for $1.00 from AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

Florida's

VEGETABLE NOMADS

Their wanderings seem destined to end, for crop rotation looks like the answer to their problems

By WILLIAM G. MITCHELL

Florida Agricultural Experiment Station

IF you had to clear new land for your vegetable operations each season, prepare this land and plant it even if it were 80 miles from your home, and often charge all expenses to a single crop, could you make a profit? This is the situation that has faced central and south Florida vegetable growers for many years.

To escape the many weed, insect, nematode, and disease problems they must combat, these growers have simply planted on virgin soil each season, often moving twice a year. Many growers drive 80 miles to their fields. To make matters worse, the supply of virgin land is running out.

Vegetable-Pasture Rotation

But experiments now being conducted at the Indian River Field Laboratory and the Range Cattle Station of the Florida Agricultural Experiment Station may change all this. Norman G. Hayslip, one of the project leaders, says the scientists think the problem can be solved by rotating vegetables with improved pastures and perhaps corn and other grains.

While they don't have the final answer yet, three years of exploratory work has shown that tomatoes and Pangola grass can be used successfully in such a rotation program.

A Pangola-clover pasture seems to be more profitable than Pangola grass alone. This is because of the constant need for nitrogen on these sandy soils which are often drenched with heavy rain. In one clipping test, this sort of mixed pasture produced 6,650 pounds of dry forage in three clippings. Pangola alone produced only 875 pounds.

When Pangola was completely turned under with a bottom plow in preparation for another crop of vegetables, it was easily and completely eradicated. In tests now being run, the workers are trying a method of soil preparation in which the land is not turned, but strips of sod are merely thrown together to make a bed and planted, leaving a strip of sod in the middle to re-establish the pasture after the vegetable crop is harvested.

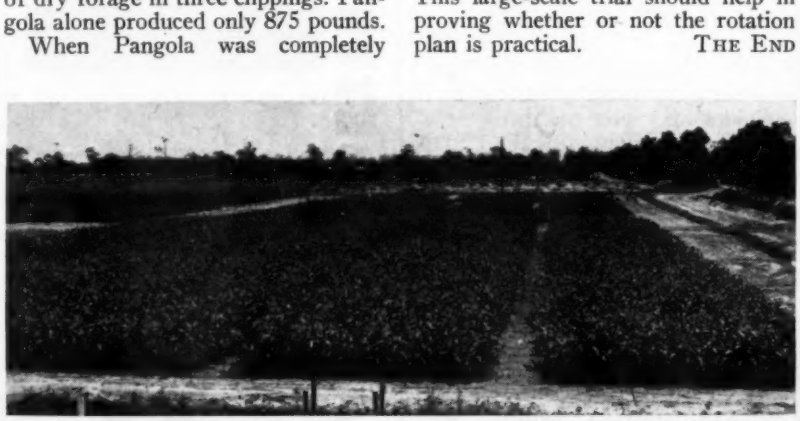
Tomato-Corn Rotation

Since tomatoes and corn have no common diseases, the scientists believe that sweet corn would also be a good crop to use in rotation with tomatoes. Fall tomatoes leave residual fertilizer, and much of the expense of land preparation has been charged off to the tomato crop.

In exploratory tests excellent quality sweet corn has been grown on the experimental plots in this way, with yields of between 200 and 300 crates per acre. Two spring fertilizer trials with sweet corn following fall tomatoes have shown that 50 to 60 bushels of corn per acre can be grown, using only nitrogen on the corn. There is enough phosphorus and potash left from the tomatoes to make this yield.

A considerable amount of basic information is on hand, but the project leaders—Hayslip and Dr. E. M. Hodges and D. W. Jones of the Range Cattle Station—say that certain parts of the vegetable-pasture rotation need more study.

The Atlantic Land and Improvement Company and E. B. Hull, of LaBelle, are co-operating with the experiment station in a 112-acre rotation trial in the Devil's Garden area. This large-scale trial should help in proving whether or not the rotation plan is practical. THE END



Spring sweet corn planted after fall tomatoes in experiments at Florida's Indian River Field Laboratory produced excellent yields of high-quality corn. Improved pasture then follows the corn crop.

The question is: "Should

VEGETABLE TRANSPLANTS

be bare-root or container grown?"

By E. K. ALBAN

Ohio State University

THE growing of vegetable plants in various forcing structures, for transplanting into the field, has been a standard commercial practice for many years. There exists, however, some difference of opinion on the relative value of the more expensive container-grown plant as compared with the bare-root plant. Actually, there is a minimum need for controversy on this subject if one analyzes his particular problem in the light of available information.

Vegetable plants are started in forcing structures or obtained from southern growers, so that a partially grown plant will be available to place in the field under favorable environmental conditions. Primarily this is done to assure an earlier harvest or to extend the harvest season of some of our vegetable crops which are grown under climatic conditions which tend to limit the outdoor growing season.

Plants for transplanting should be grown so that they can be placed into the field and continue to grow with a minimum check in growth. Severe checks in growth tend to minimize the value of the partially grown plant used in transplanting.

Ideal Transplant

Ideally, the grower would like to use a well-grown, properly hardened plant that could be transplanted, with no root or top pruning, and continue to grow without any check.

Theoretically, a transplant that could be moved from the forcing structure with a ball of soil and roots intact would do better than a bare-root plant. In practice, however, this apparent advantage of the container-grown plant has not always proved to be of economic advantage as compared with the bare-root plant.

Celery, cabbage, cauliflower, and tomatoes for canning, are examples of crops where the more expensive container-grown plants do not appear to be warranted based on comparative returns with the use of bare-root transplants.

Modern Containers

Unfortunately, many growers have allowed themselves to become convinced that container-grown trans-

plants are too expensive for the commercial vegetable grower.

The development of composition and veneer bands, peat or composition pots, which can be taken directly from the forcing structure and transplanted into the field with standard equipment offers a real opportunity for the grower to produce earlier and better fresh-market tomatoes, peppers, and possibly other crops.

One more tomato or pepper from the better container-grown plant will more than pay for the slight increased cost in producing the plant. Our research results indicate that actually the first two or three clusters often yield more quality tomatoes with container-grown plants as compared with well-grown bare-root plants.

Production costs and gross returns vary considerably from area to area, so that it is not possible to predict

Container-grown plants more than pay for the increased cost of producing the plant.

that your area, or you as a grower, should use container-grown vegetable transplants.

Try Some

If you produce plants for sale to the home gardener, you should very definitely begin to increase your use of these containers for your customers. If you are interested in the early market production of high quality vegetables, you should try some of these containers for your usual vegetable transplants.

Management practices, watering, soil mixture to use, supplemental fertilizer applications, and temperature to maintain will vary somewhat with each container. The kind of vegetable and the length of growing period will determine the size of container that you should use.

Warm-season crops such as tomato, pepper, eggplant, cucumber, muskmelon, and watermelon for the fresh market are more likely to warrant the added cost of container as compared with cool season crop transplants such as celery, cabbage, cauliflower, head lettuce, and broccoli. THE END

CONTROL DAMPING-OFF

Follow these 4 simple rules and you will produce vigorous seedlings

By CHARLES CHUPP
Cornell University

THERE are 4 rules in controlling damping-off, and none is complicated. Certainly the commercial grower cannot afford to neglect these or similar recommendations.

Rule 1—Treat all seed that requires it for specific diseases, or better still, buy the seed already treated. Cabbage and others of the cabbage family, as well as tomato seed, should be hot-water treated. Occasionally one reads that some seed-growing areas are free of disease and that hot-water treatment is not necessary. When the grower follows this wrong advice, he is almost sure to end up sooner or later by having black-rot take his cabbage, broccoli, and cauliflower crops.

There are at least 9 diseases of tomatoes partly or wholly controlled by the hot-water dip. Tomato, cabbage, and Brussels sprouts seeds are held in the hot water (122° F.) for 25 minutes.

All the other crucifers are treated only 20 minutes. Rarely carrot (15 minutes), eggplant (25 minutes), spinach (25 minutes), and celery (118° F. for 30 minutes) also are treated with hot water when advised by the local plant pathologist for some specific disease.

Cucumber, melon, squash, and pumpkin seeds are treated with corrosive sublimate, 1 ounce in 7.5 gallons or 1 tablet in each pint of water. The seeds must be washed thoroughly in running water after treatment. This chemical is a deadly poison when taken internally and should be handled with great care.

Rule 2—Dust the seed lightly just before planting with some fungicide to prevent seed-rot before germination and pre-emergence damping-off of the sprout. Commonly used dust materials are Arasan, Semesan, captan, Phygon, and zinc oxide. Many others are on the market and can be used according to the directions of the county agricultural agent or state pathologist. Spergon generally is preferred on peas and is good also on lettuce and the seeds of the vine crops. Tersan may be preferred on onions.

Rule 3—Spray the young plants in the seed bed with ziram or captan, 2 pounds in 100 gallons or 1 ounce in 3 gallons of water. The spray should be a fine mist and should never be applied at a pressure greater than 250 pounds. It is necessary to spray both the soil and the plants. The applications are made at 5- to 7-day intervals, beginning as soon as the plants show above ground, and continued until ready to set into the field.

Tomatoes and celery can be sprayed alternately with one of the low-soluble coppers (not an oxide), 3 to 4 pounds in 100 gallons. It is not a good practice to use copper on the cabbage family, on muskmelon seedlings, or on peppers. There also is some indication that captan should not be applied to celery seedlings.

It may be well to treat the mem-

One of the 4 rules in controlling damping-off is to use composted soil. Photo shows shredding and sifting soil from compost pile for greenhouse flats. Photo courtesy Dr. H. John Carew.

bers of the cabbage family with corrosive sublimate, 1 ounce in 15 gallons, or calomel, 1 ounce in 6 gallons, applied along the row but not on the plants. Two or three applications are required.

Sprays are of no value in cold frames or in cold greenhouses when the night temperatures are much below 57° F.

Rule 4—This rule, which really should come first, is the making of a compost pile. It may consist of only a few wheelbarrowsful of dirt and humus or be one containing hundreds of cubic yards. Enough soil, humus, fertilizer, and lime are put together to last 2 or 3 years. The pile is turned at the end of the first year, then is left for 1 or 2 more years before being used.

Large piles must be tested for soluble salts and acidity before the soil is shredded, sifted, and placed in flats. Long composting destroys weed seeds, destructive insects, and disease-producing organisms.

Soil sterilization and various drenches are not necessary if the above 4 simple rules are put into practice. One state grows nearly 120 million healthy tomato plants by the use of these simple methods or recommendations. THE END

Four million healthy tomato plants in one house. These were grown according to the 4 rules enumerated in article. Courtesy Dr. H. John Carew.

HYBRID SEED PRODUCTION

Pioneer producer tells of development of seeds and meaning of "hybrid vigor"

By H. B. PETO

Peto Seed Company, Ventura, Calif.

HYBRID vegetable seed production is relatively new in America and quite recent in Ventura County, California.

Ventura County is a desirable location for this type of production mainly because of its optimum climatic conditions. The first hybrid vegetable crops were produced in this county in 1944 and the author started in wholesale production of hybrid seed in 1950.

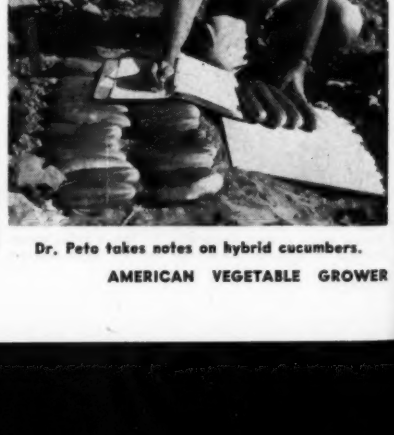
The term "hybrid" refers to the first generation (F_1) cross between two parents with the resulting phenomenon of increased vigor called "hybrid vigor."

Early Development

The first real use of the commercial hybridization was in corn in 1907 at the Connecticut Agricultural Experiment Station. Such men as Jones, Hayes, Ritchie, Jenkins, and others contributed notably to this new development which now takes in about 90 per cent of the field corn produced in the United States.

The first big users of hybrid vegetable seeds were the home gardeners through the catalog houses. Then the large market growers started using hybrids and the demand has increased each year. The hybrids that are produced in Ventura County at present are tomato, cucumber, watermelon, onion, eggplant, squash, and spinach. New hybrid classes are being added each year.

Hybrid tomatoes are being used by the large grower-shippers for green



Dr. Peto takes notes on hybrid cucumbers.

shipping and also for ripe pack for local markets. A limited quantity is being used by the canning trade. Most of the hybrid tomatoes are earlier than the standard varieties and give high yields of smoother fruit. Other desirable characteristics are added wherever possible, such as disease resistance, freedom from cracking, reduced blossom drop, etc.

Actual increases in yields in such classes as hybrid tomatoes are as follows: Michigan and Tennessee, 96 per cent increase in yield over the standard varieties and Rhode Island, 52 per cent. Pennsylvania has reported 10 to 39 per cent more fruit harvested per acre.

In 1951 one hybrid cucumber won a bronze medal. This hybrid was called Early Surecrop, and in 1952 this same cucumber won the All America Award. This hybrid cucumber has a wide range of adaptability and its fine qualities coupled with disease resistance make it very outstanding.

New Seed Each Year

In selling F_1 seed to growers, they should be warned not to harvest the seed from the crop for use the following year because of the segregation that will show up the following year. Growers should obtain new F_1 seed from the same source each year in order to keep the high quality desired. The pollination in hybrid tomato production is quite laborious, as the work is done by hand. Workers have to remove the male parts of the bloom and introduce pollen later from the foreign parent.

In some classes such as the hybrid onion, a method of hybridization was worked out by the USDA making it possible to grow hybrid onion seed by planting the two parents in alternate rows in the ratio of 3 to 1 in the field. Insects then do the pollinating. Only seed from the female rows is harvested, the seed from the male rows being discarded. In the production of the hybrid onion three lines are required. The A and B lines are grown in cages to produce what is known as the male sterile. In field production the male sterile or females lines are interplanted with a third or C line for the production of the hybrid onion seed.

In hybrid tomato seed production great progress has been made in the introduction of male sterile lines. The type of sterility reduces the amount of work necessary in the hybridization of the tomato and in turn reduces the cost of production of the hybrid seed. THE END

HYBRID ONION TRIALS
Are HOT News in the North

By C. E. PETERSON
Michigan State College

THOSE who have participated in the development and testing of hybrid onions are convinced that the new hybrids will revolutionize the onion variety picture in the North. This view is shared by many farmers and seedsmen who have observed the hybrid onion trials or studied the results.

Certain hybrids will yield 15 to 25 per cent more than open pollinated varieties of comparable storage quality. This is important but it is only one of the advantages of hybrids. Characters such as storage quality, earliness, greater uniformity of shape and color, tight scales, and freedom from grade defects may be more important than increased yield.

In December, 1953, twelve new hybrid onions were officially named and released by the USDA and cooperating state experiment stations. At the same time, foundation seed of the inbred lines used in these hybrids was offered to seedsmen. Some of the outstanding vegetable seed producers in the country are busy increasing these foundation stocks so that the expected strong demand for seed of the new hybrids can be met as soon as possible.

By 1956 growers will be able to buy limited amounts for trial and by 1957 seed should be available in quantities sufficient to meet demand.

30 Years of Research

Many years of painstaking effort have been devoted to the development of hybrid onions. In 1925 Dr. Henry A. Jones discovered a pollen-sterile plant in an inbred line of Italian Red onions growing in breeding plots at Davis, Calif. The ancestry of every pollen-sterile onion line used today in producing hybrid seed can be traced back to that single plant discovered 30 years ago.

Most of the early work was done by Dr. Jones and his associates in the USDA. During the past 10 years plant breeders at several state experiment stations, particularly Idaho, Iowa, Wisconsin, New York, Texas, and Colorado have been breeding and testing hybrid onions. Important contributions have been made by seed companies. Sufficient experience in hybrid seed production has now been gained to insure sources of good seed at reasonable cost.

Abundance, a high-yielding F, hybrid for limited storage, shown above, is well adapted to areas where Early Yellow Globe is grown.

During the past four years hybrids have been tested in from 10 to 30 or more trials in such widely scattered locations as New York, Michigan, Wisconsin, Indiana, Iowa, Colorado, and Idaho. These trials gave extensive yield and storage data which were valuable in deciding which hybrids should be named and released.

Qualities Compared

It is impossible to develop one hybrid that will suit all locations and all needs. A hybrid such as **Early Harvest** should not be stored because it will not hold up for long periods or stand rough handling and deep piling in bulk storages. This extremely early, mild hybrid is intended for the early market before other northern varieties mature. From direct seeding it will mature almost as early as set-onions in many locations. **Abundance,** a very high yielding hybrid, will stand a short storage period but because it is not a hard onion it cannot be subjected to rough handling and deep piling.

Champion, Encore, and **Contender** are intermediate in storage life and hardness. **Elite, Bonanza, Epoch, Aristocrat,** and **Surprise** are relatively hard and suitable for long storage. **Fiesta** is especially well adapted to the Sweet Spanish areas

of the West. **Pioneer** has performed well in the Mountain Danvers area of Colorado's western slope. It is intended for production in that area and if grown in other places it should be done on a trial basis.

Individual Trials

Growers, seedsmen, and dealers should become familiar with these new hybrids before seed is generally available. Before converting important portions of his acreage to any hybrid, a grower should have a small-scale trial of his own, following recommendations of his state experiment station. In most onion producing states experimental data are available on local performance of hybrid onions over a period of years. This source of information should be utilized by growers in deciding which hybrid to plant. The season of 1955 and 1956 will see further extensive experimental trials and small quantities of some hybrids will be sold to growers for trial.

The fact that an onion is a hybrid does not guarantee that it will be superior to the standard open-pollinated varieties. While the highest-yielding, best-keeping, and most attractive onions in trials have been hybrids, some of the poorest have also been hybrids. There are good hybrids and poor hybrids for a given area just as there are good and poor varieties.

The great improvement of the new hybrids over present standard varieties justifies the extra effort and cost of producing seed. The swing to hybrids will be rapid when their value and special qualities are understood. On the basis of the data and experience now available we can expect to see the familiar history of hybrid corn repeated in hybrid onions.

THE END

HYBRID ONIONS RELEASED IN DECEMBER, 1953.

Name	Sponsors of releases
Abundance	Iowa, USDA, and Idaho
Aristocrat	USDA, Ohio, Idaho, and Iowa
Bonanza	USDA, Idaho, and Iowa
Champion	USDA, New York, Iowa, and Idaho
Contender	USDA, Iowa, and Idaho
Early Harvest	USDA
Elite	USDA, Indiana, Iowa, and Idaho
Encore	USDA, Iowa, and Idaho
Epoch	USDA, Idaho, and Iowa
Fiesta	Idaho, USDA, and Iowa
Pioneer	USDA, Colorado, and Idaho
Surprise	USDA, Idaho, and Iowa

One of the keys to success in hiring good intelligent workers and holding them from year to year is attractive, comfortable housing. Send $1 for working drawings showing construction details of 3-Room Tenant House to AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

THE NEW LOOK

(*Continued from page* 15)

Sheet vinyl plastic, available in several widths and in almost any lengths, might also be kept in mind as something to quickly unroll over cold frames during cold snaps. It offers tight protection and is much more convenient to use than mats or straw.

Dual-Purpose Frame

Where a dual-purpose frame is desired (one allowing the hardening off of young plants in spring and the growing of crops even beyond frost in the fall), a structure such as shown in Figure 5 might be practical. Here the wooden supports are permanent, and might even be replaced by pipe supports. Vinyl plastic or Sisalkraft sheets form the covering and are rolled down from the peaked roof as well as on the ends and sides.

This type of structure, while perhaps not the best from the standpoint of the specialized grower of vegetable and spring bedding plants, would find a place in many establishments. As shown, the identical setup is used later in the season for a fine crop of shaded off-season mums.

Year-round Frames

Considering your investment, it is highly desirable to find a use for your frames all through the year—not just during the early spring months. Frequently they can be used during the summer for growing various crops and pot plants, especially if some shade can be supplied cheaply. Lath shading is effective but expensive. Heavy-grade woven wire fencing can be arched over the frame, as illustrated in Figure 6. When covered with coarse netting or camouflage cloth, we have ideal shade without trapping in heat. On dark days the cloth can be rolled up as shown in the foreground bed. It is easily held in place with ordinary spring clothespins. THE END

CALENDAR OF COMING MEETINGS AND EXHIBITS

Mar. 10—North Jersey Fruit Growers meeting, sponsored by extension service and New Jersey State Horticultural Society, Far Hills Inn, Somerville.—E. G. Christ, Sec'y, New Brunswick.

Mar. 9-10—Iowa Fruit and Vegetable School, Council Bluffs.—Glenn Raines, Sec'y, IFGA, State House, Des Moines.

Mar. 21-22—Kern County Potato Growers Association 11th annual convention, Bakersfield Inn, Bakersfield, Calif.—Francis P. Pusateri, Exec. Sec'y, Bakersfield.

Apr. 5—Market Garden meeting during Farm and Home Week, University of Maine, Orono.

Aug. 16-20—Centennial of Farm Mechanization, Michigan State College, East Lansing.—A. W. Farrell, Head Agr'l Engng. Dept., MSC, East Lansing.

Oct. 4-6—Florida Fruit & Vegetable Association annual convention, Hotel Fontainebleau, Miami Beach.—Geo. Talbott, 29 S. Covit St., Orlando.

Nov. 1-3—Florida State Horticultural Society 67th annual meeting, Fort Harrison Hotel, Clearwater.—Ernest L. Spencer, Sec'y, Bradenton.

STATE NEWS

(*Continued from page* 18)

Prevent Potato "Hollow Heart"

LOUISIANA—Hollow heart in Irish potatoes can be prevented by closer spacing when planting, John A. Cox, LSU extension horticulturist, says.

Hollow heart is a large open space in the potato with an occasional brownish corky tissue surrounding it. Large potatoes will be affected more seriously than smaller ones. It is a result of rapid growth and is sometimes caused by use of too much nitrogen as fertilizer. It may also occur when temperatures, rainfall, or other conditions are ideal for rapid growth. Since it is not a disease, it has no effect on the following crop.

Hollow heart can be prevented by closer spacing of the plants in the row. On good rich land, 8 to 10-inch spacing, instead of the usual 12 to 14 inches, is recommended. This will prevent such rapid growth, even on soils high in nitrogen.

Cherokee in Trademark Family

The Cherokee potato has joined the family of varieties which may be shipped under Maine's official Blue, White and Red State Trademark, the Maine Department of Agriculture's Division of Markets states.

The six other varieties eligible—one variety to a package—are Katahdin, Green Mountain, Kennebec, Teton, Russett Burbank and Canso.

Of 2,550 carloads of Maine potatoes shipped during the last six weeks of last year, 695 carloads were of washed potatoes. Of approximately 1,750 truckloads during the same period, 240 were washed.

Potatoes under the official state trademark accounted for about 10 per cent of the washed shipments, a division spokesman said.

Cold Weather

FLORIDA—Temperatures during January averaged several degrees below normal in the vegetable-producing areas. Slightly below freezing to near freezing temperatures, with light to heavy frosts extending into the Everglades occurred during the middle and latter parts of the month. Rather extensive damage was done to tender vegetables as far south as the Everglades.—*George M. Talbott, Florida Fruit & Vegetable Assn., Orlando.*

Cut Sweet Corn Bacterial Wilt

DELAWARE—Sweet corn growers can solve many of their problems with bac-

(*Continued on page* 34)

STATE NEWS

(Continued from page 33)

terial wilt by ordering sweet corn seed from late-manuring varieties. These seeds produce plants that are more tolerant of bacterial wilt than the early maturing varieties.

Drs. H. E. Milliron and J. W. Heuberger of the University of Delaware's departments of entomology and plant pathology warn sweet corn growers that adults of the common corn flea beetle harbor the wilt bacteria and infect corn plants on which they feed.

During mild winters sufficient numbers of these beetles survive to cause heavy infection of corn in the spring. Infected seed can also introduce the disease into a field.

The migration of beetles from infected to non-infected areas is responsible for considerable spreading of the disease during the growing season. In areas where wilt is serious, a certain percentage of the infected plants become stunted and die before reaching 6 to 8 inches in height.

Other plants continue to grow, but develop broad, light streaks parallel to the midrib of the leaf, which often shrivels. Such plants that do survive the attack ordinarily produce ears that are small and of poor quality.

The late-maturing and more tolerant varieties recommended are: Iochief, Huron, Golden Security, Code 199, Golden Standard or Normandie Improved. Two desirable, though not entirely resistant, mid-season varieties are Carmelcross and Barbecue. *Avoid the early-maturing, highly susceptible varieties.*

New Tomato

Seeds of a new tomato, Homestead No. 2, are being released to seedsmen by the Florida Agricultural Experiment Station at Homestead and the USDA. For two years at the Sub-Tropical Experiment Station, Homestead, and in commercial fields, it has attracted widespread attention of growers.

Developed in co-operation with the Southeastern Vegetable Breeding Laboratory, Charleston, Homestead No. 2 has the same near immunity to fusarium wilt as the Homestead, is uniformly semi-determinate, and produces more nearly globe-shaped fruit. Productivity and size are believed to equal that of Homestead, which was released in 1952.

Homestead has proven highly popular in southern Florida, even though it has considerable variability in plant type.—*Francis Cooper, Editor, Agr'l Exp. Sta., Gainesville.*

New Officers

MARYLAND—At their annual winter meeting the Maryland Vegetable Growers' Association elected the following officers: Theodore Schmick, Hurlock, president; John Foard, Hyde, vice-president; A. A. Duncan, College Park, secretary-treasurer; Francis C. Stark, College Park, assistant secretary. Serving as directors are St. Clair E. Hess, Fallston; C. Preston Smith, Salisbury, and Richard Streett, Forest Hill.

Officers of the newly-formed Maryland Bird Control Committee are Bill Bradley, Salisbury, chairman, and Gene Stedman, Easton, secretary.

With the acreage of fall spinach somewhat lower in competing areas, Maryland growers enjoyed a steady market for their usually superior greens. Quality was excellent, but yield was a little low because the spinach was on the small side when it was cut.—*A. A. Duncan, Sec'y, College Park.*

Fiesta Tailor-made

IDAHO—The new hybrid onion, Fiesta, has won hearty approval from this state's growers and seedsmen. Tailor-made for Idaho, it is outstanding as a longer storage onion highly suitable for dehydrating.

D. F. Franklin, superintendent of the University of Idaho's Parma station where

Fiesta was developed, commented, "I think there is little doubt that the variety will be accepted, at least in southern Idaho and eastern Oregon.

Unfortunately, there is no more seed of Fiesta available for planting this year, and very little for next year, 1956. There should be enough seed in 1957 to satisfy requirements.

Sweet Potato Grower Honored

NEW JERSEY—Louis J. Sanguinetti, sweet potato grower of Minotola, was one of three farm leaders honored by the State Board of Agriculture at its 40th annual convention recently. He is a past president of the New Jersey State Horticultural Society, and of the State Board of Agriculture.

He was recognized for his work in the advancement of the sweetpotato industry. Since the 1930's he has specialized in the growing of sweetpotatoes and has been active in developing new varieties and marketing methods. Just now he is chairman of the New Jersey Sweet Potato Industry Committee.

"You have made the revival and advancement of the sweet potato industry your cause," the citation stated . . . You generously contributed your farmstead as the laboratory for hundreds of trials and demonstrations . . . Thanks to your faith and foresight New Jersey already holds first rank in proficient production."—*Ernest G. Christ, Ext. Veg. Crops Spec., New Brunswick.*

Sweetpotatopanic

Personally, we're confused. After calling them sweet potatoes for many years, we learned that the USDA was calling them sweetpotatoes. So we started calling them sweetpotatoes, only to find that many people (including our wise old dictionary writer) were still calling them sweet potatoes. Now probably there's not much difference between a sweet potato and a sweetpotato; the merest whisper of a space divides them. But we wonder how soon it will be before sweetpotatopie, sweetpicklerelish, and sweetcornonthecob appear on the market?—*State News Editor.*

Sweetpotato Seed

SOUTH CAROLINA—Sweetpotato growers are advised to plant only certified seed carrying the inspection tag of the South Carolina Crop Pest Commission. This is the best way to stop fusarium wilt, or stem rot, a disease which is spreading throughout the state, Hugh A. Bowers, Clemson extension truck specialist, says.

The disease, which results from the planting of infected seed, kills young plants or, if the plants survive, stunts their growth, thereby reducing yield of U.S. No. 1 sweetpotatoes.

"When soils have become infected with wilt or stem rot," Bowers said, "it is well not to use them for the production of sweetpotatoes for a period of probably eight to ten years, as it is still undetermined just how long the soils will remain infected."

Treatment for Pre-peeled Potatoes

NEW YORK—A new method of commercially treating pre-peeled potatoes which extends their life in cold storage and nearly eliminates after-cooking darkening, has proved promising in recent experiments at Cornell University.

Smith Greig, a graduate student in vegetable crops, has found that when a chemical called EDTA is added to sodium bisulfite and applied to potatoes after peeling, storage life is extended up to 30 per cent and after-cooking darkening is greatly reduced.

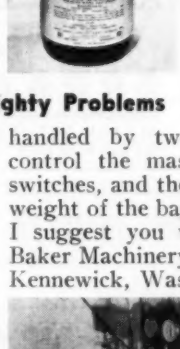
While EDTA is colorless, tasteless, odorless, and non-toxic, Greig said that prospective users should check with the Food and Drug Administration.

NEW FOR YOU

—to increase your profits

Watch 'em Grow with Ferti-Liquid

Many of our readers are using the new all-purpose liquid fertilizer. Ferti-Liquid contains all the nutrients needed for high profit, extra fancy vegetables. Primarily used for seed treating, and as a foliage spray for growing vegetables, it more than pays for itself in increased production. It is easy to use, cheap, will mix quickly with almost all chemicals, and can be applied while spraying. Write Bill Hallewell, Clover Chemical Co., P.O. Box 10865, Pittsburgh, Pa., for the facts.

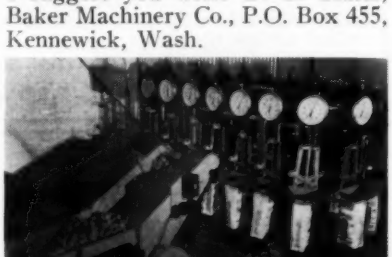


Crawlers Mean Profit

Many growers have found the crawler-type tractors to be the profitable solution for vegetable production. The Oliver crawler (above) is not dependent on weather or terrain. This practical tractor will help you operate on a time schedule basis. No need to wait for dry fields. The crawler operates equally well in the wettest weather and because of its continuous power tread, hillside plantings are no problem. One of the best crawlers for vegetable growing is the Oliver "OC-3." This famous crawler can go to work for you. Write Bob Dinnsen, Oliver Corp., 400 W. Madison St., Chicago 6, Ill., for your free booklet on it.

Accurate, Fast Bagger Solves Weighty Problems

One of the largest potato growers has installed a new bagger which has increased his production and curtailed costs. The machine incorporates many new ideas which all growers have long wanted. An automatic device keeps a uniform supply of potatoes at the foot of the elevator. The elevator is 24 inches wide and each sack hanger is 12 inches wide. Thus, two bags are filled at once without jamming or wedging. The sacks are filled while they are moving, and each flight of the elevator is so designed as to deliver 10 pounds of potatoes at a time. The entire unit can be handled by two persons—one to control the master and individual switches, and the other to check the weight of the bags as they are filled. I suggest you write D. B. Baker, Baker Machinery Co., P.O. Box 455, Kennewick, Wash.



High Quality High Profit Vegetables through Proper Spraying

Growers are giving more attention to proper spraying procedures to insure high quality and increased profits. The first step is a sprayer of adequate capacity and pressure—a rig which will stand up with a minimum of maintenance. The new Aircrop (left), quickly converts your present boom sprayer into a modern high efficiency machine. It completely covers several rows at a time, and is built with John Bean's regard for sound engineering. For full information, write Art Gerard, John Bean Division, Box 840, Lansing 4, Mich.

Forward and Reverse Power

The garden tractor at right—S. L. Allen's new '55 model—is the first garden tractor we know of which includes a reverse gear as standard equipment. Powered with the famous Briggs and Stratton engine, it does every job with ease and a minimum of effort on the part of the operator. All of the famous S. L. Allen implements, including the precision seeder, will fit the new tractor. Write S. L. Allen & Co., Inc., 3419 N. 5th St., Philadelphia 40, Pa.

Increase Tomato Profits

Smart tomato growers are grading their crop for color and size. Many are using the new White grader (above), which carefully rotates the tomatoes as they proceed along the line. In this way the over-all color of each tomato is easily observed. Growers and packers report reduction in manpower of 50 per cent and increased production amounting to 100 per cent. Write Scott Saunders, R. G. White Manufacturing Corp., 101 97th Ave., Ozone Park 16, N. Y., for the details on this remarkable machine.

OPPORTUNITY ADS

Only 25c a word for one-time insertion; 20c a word for two-time insertion; 15c a word for four-time insertion—CASH WITH ORDER. Count each initial and whole number as one word. ADDRESS AMERICAN VEGETABLE GROWER, Willoughby, Ohio

FOR SALE—EQUIPMENT AND SUPPLIES

SOLVE YOUR VEGETABLE SPRAYING problems with one of our rebuilt and guaranteed John Bean high-pressure sprayers. We have 400- and 500-gallon tank outfits with 35-gallon pumps, both motor driven and power take-off. Wheel spacing and clearance will be converted to suit your needs. Attractively priced. MILLBURG GROWERS EXCHANGE, Benton Harbor, Michigan, southwestern Michigan's oldest and largest Bean dealer.

POTATO EQUIPMENT, COMPLETE LINE. 4-row Iron Age planter, 12-row Bean sprayer, Deere 2-row level bed digger, Noffsinger harvester, 2 complete Lockwood graders, conveyors, bin fillers, seed cutters, self-unloading wagons, EHG Cletrac 68" with four-row cultivator, 4-row cultivator for OC-6 Oliver Crawler, Bean Roto-Beater, many other items. All in good shape. For full particulars, write or phone, MERLE HORSWELL, Williams, Iowa, Phone 3117.

NEW IRON AGE TRANSPLANTER, ONE-row, with fertilizer attachment. Bargain. GIESZELMANN IRRIGATION EQUIPMENT, Collinsville, Illinois.

HARDIE 35 G.P.M. 500 GAL. TANK TRACtor trailer. Used 3 years. Also Bean Royal 20 G.P.M. 300 gal. tank and trucks. WM. A. PACKER, Adena, Ohio.

1—1953 MODEL 29-L SPEED SPRAYER; 1—Bean Speedaire; 1—Aqua-Jet Blower; 1—Bes-Blo; 1—Niagara Duster; a quantity of new wire-lined 2" Suction Hose, 14 ft. lengths with 2" pipe fittings. Bargain. 1—Niagara Grader; 1—Myers PTO Sprayer. CORY ORCHARDS, Cory, Indiana.

35 G.P.M., 400 TANK, HARDIE SPRAYER, engine powered trailer. WELDAY'S ORCHARD, Smithfield, Ohio.

MEDICAL

LATEST METHODS TREATING PILES, FISTula, Colon-Stomach disorders. Write for free book. McCLEARY CLINIC AND HOSPITAL, E145, Excelsior Springs, Mo.

MISCELLANEOUS

BLACK RASPBERRY PLANTS. CERTIFIED, disease free Raspberry plants. Cumberland, Morrison and Bristol plants available at wholesale and retail prices. Contact the OWEN POTATO FARM, Newark, Ohio.

MORE AND MORE VEGETABLE GROWERS are enjoying winter farming in Palm Beach County, center of winter production. Farms in the path of suburban development soon grow into high price building lots. Contact E. H. BORCHARDT, Boynton Beach, Fla.

NATIONALLY ADVERTISED REBUILT Vacuum Cleaners. $39.95 FOB Youngstown, Ohio. World famous models with a complete set of attachments: 1. Rug Nozzle, 2. Floor Brush, 3. Upholstery Tool, 4. Crevice Tool, 5. Dusting Brush. Including completely rebuilt motor with new parts. Also hose, dust bag, filter, 20' cord. Satisfaction guaranteed or your money back. Order yours today. Write BOX 103, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

SEEDLESS WATERMELON

Be first to grow amazing seedless melon pictured in Life Magazine. Originator's colchicine developed hybrid-delicious sweet bears 5-7 seedless table-size melons per vine. We furnish 20 seeds for plants, plus pollinators, heating cable, soil treatment, planting bands, instruction handbook for starting, transplanting, growing. Complete kit $3.95, check or M.O. No C.O.D. Handbook and 20 seeds only $2.95. Order from this ad.

AMERICAN SEEDLESS WATERMELON SEED CORP.
Dept. G, R.R. 1, Goshen, Ind.

STRAWBERRY PLANTS. POSTPAID $2.60—100, $17.00—1,000. Write for varieties. AUDRITSH'S NURSERY, 912 Franklin St., Fremont, Ohio.

PEAFOWL, SWANS, PHEASANTS, Guineas, Bantams, Waterfowl. Thirty varieties Pigeons. JOHN HASS, Bettendorf, Iowa.

VEGETABLE PLANTS

SEND NO MONEY—CERTIFIED FROST-proof Cabbage and Onion Plants. All varieties. Pay Postman. 200 plants $1.00, 500 plants $2.00, 1000 plants $2.50, 2000 plants $4.00. Plus Postage. Our new 1955 Calendar-Catalog free with each order. Order now. P. D. FULWOOD COMPANY, Dept. 100, Tifton, Georgia.

CERTIFIED TOMATO, CABBAGE, PEPPER and Onion Plants. All leading varieties. Grown under complete disease control. Satisfaction guaranteed. Write for free pamphlet. JOHN THORNHILL PLANT CO., Tifton, Georgia.

WHY WASH POTATOES?

(*Continued from page* 16)

The Helms used the dry pack for about 16 years, then the demand became insistent for washed potatoes. Realizing that the washed potato was here to stay, the Helms built a warehouse on their own farm. In 1950 they installed a potato washer. This machine consists of a 32-inch elevator, one 36-inch sizer to take the seed potatoes out before washing, one 48-inch roller-type washer with jet sprays, one 12-foot double roller picking table. As the demand increased, a spool sizer was put in the line to handle the sizing of the clean potatoes for packaging.

Later the demand was for waxed potatoes. A Lockwood dripper-type waxer was installed. Their shipments of consumer-size packages have increased until at present approximately 35 to 40 per cent of their total shipments are in 10-pound bags. Their automatic bagger had to be equipped to handle any type of bag, for their 10-pound shipments today run approximately 40 per cent mesh, 20 per cent paper, and 40 per cent polyethylene bags, with the latter increasing in popularity yearly.

In 1954 shipments from this grower-warehouse, all by truck, totaled 1,250 carloads. The Helms employ 50 people for nine months of the year. THE END

YEAR-ROUND MARKET

(*Continued from page* 11)

squash during a season. Varieties grown are Blue Hubbard, acorn, butternut, and turban. These are stored in an insulated squash house which is kept at 45° with bottled gas heat. If the temperature drops, thermostat-controlled electric heaters go on automatically. Sales of this crop are continuous throughout the fall and winter.

One big money-making crop directly connected with the greenhouse and hotbeds is tomatoes. Some years Lievens has ripe tomatoes to sell in November. Tomatoes are started inside in 6 x 6-foot flats and transplanted to the fields. Before the killing frosts in late September, all the green tomatoes are picked for the relish manufacturers with the exception of 100 bushels or so that are kept to ripen in the greenhouse. These are shipped to top markets at a time when tomatoes are scarce and high-priced.

It's surprising how well a greenhouse will work in with an established farm program. Edward Lievens finds it pays off and helps keep customers buying Holly Hill Farm vegetables throughout the year. THE END

HAND TRANSPLANTER

That Sets, Waters and Covers Plants in One Operation

Here's a tool for both the large and small operator.

The large grower uses it for filling in skips or where plants have failed to take hold.

A small grower will make his entire planting with the Lynchburg Automatic Transplanter.

This transplanter will handle tomato, cabbage, sweet potato, pepper, egg plant, cauliflower, strawberry, tobacco plants and all other slip plants.

The Lynchburg Transplanter is ruggedly constructed and is guaranteed for one year against faulty workmanship or defective materials.

Order direct or through your nearest supply dealer. Let us send you our descriptive folder.

Reasonably Priced

LYNCHBURG PLANTER MFG. CO.
LYNCHBURG, VIRGINIA

Are You A Seed Salesman?

Add to your income by selling AMERICAN VEGETABLE GROWER. It's a logical combination for AMERICAN VEGETABLE GROWER will help your customers get the best results from the seed you sell them. *Make every call pay!* This means additional cash for you regardless of whether you sell a seed order or a subscription to AMERICAN VEGETABLE GROWER.

Write today for our liberal, nursery agents' plan. Address:

EDWARD MEISTER, General Manager

AMERICAN VEGETABLE GROWER

Willoughby, Ohio

VEGETABLE PLANTS

Cabbage, Onions, Tomatoes, Pepper, Collards, Broccoli, Brussels Sprouts, Cauliflower, Eggplants, and Sweet Potatoes.

Best strains of leading varieties. Shipments catering to market gardeners' demands. Free price list.

TEXAS PLANT FARMS
JACKSONVILLE, TEXAS

The Science of Varieties

WHEN you choose a particular variety, you select the one that will grow the strongest, produce most abundantly, and will net you the most money. The one you grow may not be the best for your neighbor, nor will it necessarily be the same one you grew a decade ago. Times change, and so do vegetable varieties. Each variety is selected according to how well it responds to a given set of environmental conditions and according to how good it tastes. When we change a factor in the environment or when peoples' tastes change we must change to another variety that will fit into the new set of conditions.

Now we go a step further than this. Our plant breeders and our seedsmen have a great many new varieties ready to fit anybody's taste or to be grown in almost any place in the country. They even have thousands of varieties on the waiting list ready to take the place of some old variety which can no longer stand up under modern growing conditions and dietary habits. The variety is truly the foundation stone of our American vegetable industry. Without the great amount of work being done by our plant breeders and the seed trade to produce and distribute new varieties, the progress of our vegetable industry would be slowed enormously.

A vast amount of knowledge has been accumulated, but even that is minute in comparison to what we shall learn about varieties in the years to come. The "science of varieties" is maturing into a precise and exact one, posing some exciting challenges for the geneticists of tomorrow, as well as of today. We can't hope, ever, to know all there is to know about varieties. Neither can we say that plant breeders are wasting their time and our money just because they don't introduce a host of new varieties each year. Science doesn't work that way. There necessarily must be a great mass of work done in the laboratory and in the field, and then only a select and limited list of new creations offered for trial in the growers' own fields.

Side-Stepping Nature

SCIENCE is about to unlock the final secret of how a green leaf captures energy and transforms it into the food of the earth.

The process in nature whereby green plants combine carbon dioxide and water in the presence of sunlight to form sugars is known as photosynthesis. As yet, no laboratory process has been devised which can duplicate nature's life-giving photosynthesis. Consequently, man has from the beginning been totally dependent upon this function of nature for all his food and a great portion of his industrial energy. Photosynthesis is the basis of all agriculture too. Our green vegetables, along with all other green plants, are the food factories of the world. You might say they are where life begins.

Now, we are hearing a different story as news comes to us from the research laboratories of industries and universities. Just recently research workers at the University of California discovered two of the first compounds formed during photosynthesis. These are building blocks in the formation of starches and sugars in the green plant. They add one more piece to the puzzle. Other scientists are fitting in other pieces, newly discovered compounds, new chemical processes going on within the plant.

What is making possible the current progress in solving the photosynthesis process? Among the many scientific accomplishments, one stands out as particularly important—the use of radioactive elements. The California team has been working with radioactive carbon and radioactive phosphorus. By watching what happens to atoms of these elements as they go through the photosynthesis process, the scientists were able to make their discoveries. Since this sort of investigation is in continuous process, we perhaps can soon expect the final answer as to how photosynthesis accomplishes its task in nature.

Once the answer is found, what then? It could mean that agriculture no longer would be a vital industry, because foods could be manufactured as other products are today. Whatever the outcome, the effects upon agriculture will be tremendous. Foods then should be plentiful upon the earth, since we could manufacture them at will.

Industries other than agriculture would be affected too. It would be possible to locate factories in the tropics or in desert areas and power them by sunshine. Civilization might find itself on the move, as it would no longer be necessary to have populations centered in areas of coal, oil, and water power. We would be living in a different era from ours of today.

These are some of the thoughts being expressed by those studying our scientific progress. They are not saying *if* that day comes, but *when* it comes. Apparently scientists are aware of their own power and understanding.

". . . And again I say to you cucumbers and melons—Down with aphids and spider mites!"

Coming Next Month

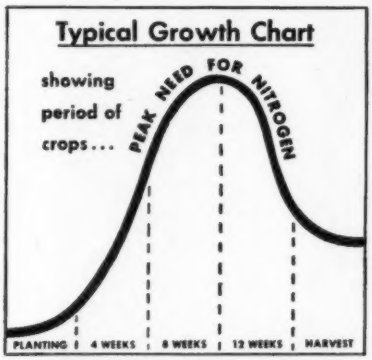
Vegetable Pest Control Issue

- Easier Insect Control with New Materials
- Concentrates Cut Spraying Costs
- A Resume of Disease Control in 1954
- Progress Report on Use of Antibiotics for Vegetable Diseases

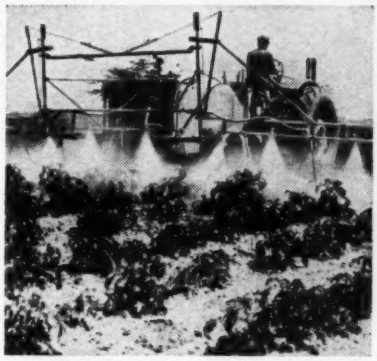
6 reasons why

Du Pont NuGREEN® is your best buy in supplemental nitrogen

Fertilizer Compound



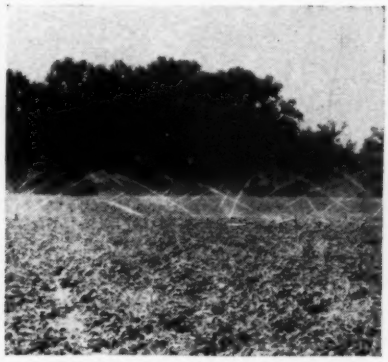
1. "NuGreen" feeds crops when they need it most. Different crops have peak nitrogen requirements at different stages of growth. You can apply "NuGreen" to meet your crop needs.



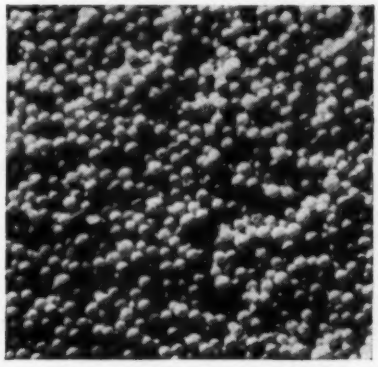
2. "NuGreen" works fast because it can feed nitrogen through the leaves. Combine it with pesticide sprays to eliminate separate nitrogen applications. Won't corrode your equipment.

3. "NuGreen" is efficient for side or top dressing. Practically every pound of "NuGreen" becomes plant food. That's because it resists leaching, is held in the soil until crops need it.

4. "NuGreen" helps turn crop residues and cover crops to plant food . . . quickly. "NuGreen" becomes ammonium nitrogen in the soil . . . helps decay organic matter, creates top nutrient levels, better soil structure.



5. "NuGreen" can be applied in any irrigation system. This efficient method saves time, labor. "NuGreen" reaches crop roots because it isn't fixed in the top few inches of soil, yet gives quick response.



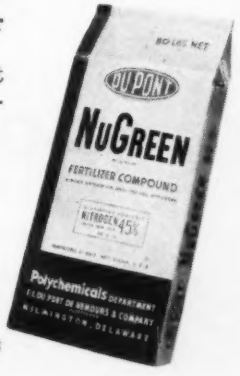
6. "NuGreen" is concentrated 45% nitrogen in shot form. Save labor by handling less material per unit nitrogen applied, whether by foliage spray, air application or side dressing.

Examples on this page illustrate some of the many reasons why "NuGreen" is your best buy when your crops need more nitrogen than is included in your other fertilizer materials.

"NuGreen" is concentrated, free-flowing and readily soluble in water. It comes in 80-lb. bags. See your dealer for "NuGreen" today. Ask for free literature giving recommendations for various crops . . . or write to us.

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington, Delaware

In Canada—Du Pont Company of Canada Limited, Box 660, Montreal.



DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

NuGREEN® *Fertilizer Compound*

Your best buy in supplemental nitrogen

Looking for a high quality hybrid?

HERE IT IS

ASGROW GOLDEN 50

Season: Main crop, maturing just after Golden Cross Bantam.
Plants: Medium height. Tolerant of drought and resistant to wilt. High yielding.
Ears: Borne about 21"; 7"-9" long, with 14-16 rows of kernels.
Kernels: Small and deep; pearly golden color. Superior quality holds well.

another Asgrow **introduction**

GET IT FROM YOUR DEALER, OR WRITE TO OUR NEAREST ADDRESS

ASSOCIATED SEED GROWERS, Inc.

Breeders and growers of vegetable seeds since 1856

Atlanta 2 • Cambridge, N.Y. • Indianapolis 25 • Oxnard, Calif. • Exmore, Va.
Memphis 2 • Milford, Conn. • Oakland 4 • Salinas • San Antonio 11

International division: **Asgrow Export Corp., Milford, Conn.**